Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 1-040

Poster Title: Development of pharmacist-driven dyslipidemia and hypertension clinics in rural Alaskan villages

Primary Author: Leanna Waalkens, Norton Sound Health Corporation, AK; **Email:** lwaalkens@nshcorp.org

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Purpose: People living in remote regions of Alaska face many barriers in receiving healthcare including limited access to and availability of healthcare providers, facilities, and medications. As a result, rural Alaskans often receive less follow-up and treatment for their chronic medical conditions than Alaskans living in more populated areas. The goal of this project is to improve treatment accessibility, medication adherence and health outcomes by implementing pharmacist-driven dyslipidemia and hypertension clinics that will serve patients in the remote Alaskan villages of the Norton Sound region.

Methods: Locations that would benefit from pharmacist driven dyslipidemia and hypertension ambulatory clinics were assessed using state reported population data on chronic diseases. The estimated number of patients with chronic diseases living Norton Sound villages was calculated by applying state reported percentages of the population with chronic diseases to the population living in the villages as reported by the United States Census Bureau. The number of patients with both dyslipidemia and hypertension was estimated using data from the National Health and Nutrition Surveys. The estimated number of ambulatory clinic hours was calculated assuming each visit would take 30 minutes and each patient would be seen twice a year. This data was used to develop a protocol for the pharmacist-driven dyslipidemia and hypertension clinics which will be presented to the Norton Sound Health Corporation's Pharmacy and Therapeutics Committee for approval.

Results: Approximately, 1,420 adult patients living in Norton Sound villages have dyslipidemia and 1,055 have hypertension. Of these 2,475 patients, it is expected that 570 have only

dyslipidemia, 205 have only hypertension, and 850 have both dyslipidemia and hypertension. A total of 1,625 patients are expected to need treatment for dyslipidemia, hypertension, or both. The estimated number of clinic hours needed to service this population is 1,625.

Conclusion: Dyslipidemia and hypertension are often undertreated in rural Alaska because of limited healthcare resources. Under-treatment contributes to negative health outcomes such as heart attack and stroke. Pharmacist-based dyslipidemia and hypertension clinics located in Norton Sound villages are being developed to decrease physician burden and improve clinic accessibility and treatment adherence. Over 1,600 Norton Sound village patients are expected to benefit from these clinics.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-042

Poster Title: Providers' and pharmacists' knowledge, attitudes, and beliefs regarding medication assisted treatment (MAT) for opioid addiction and intranasal naloxone in the Nuka System of Care

Primary Author: Natalie Li, Southcentral Foundation of the Alaska Native Medical Center, AK; **Email:** nli@southcentralfoundation.com

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Purpose: According to the CDC, more than two million Americans are addicted to opioids. In order to treat this addiction, demand for medication assisted treatment and naloxone grows, requiring an increased need for education and support for healthcare teams. The purpose of this project is to assess primary care providers' and pharmacists' knowledge, attitudes, and beliefs regarding the use of buprenorphine and naltrexone to treat opioid addiction and the utilization of naloxone for opioid-overdose. We anticipate that the results can assist the institution in developing supplemental education, protocols, and additional supportive services that may enhance opioid addiction treatment at our facility.

Methods: Study investigators will design a survey using a variety of questions (eg. Likert-like scale, multiple choice, true/false) to assess providers' and pharmacists' knowledge, attitudes, and beliefs regarding medication assisted treatment for opioid addiction and intranasal naloxone use for prevention of opioid overdose-related deaths. The survey will be created using Survey Monkey, which will then be distributed to providers and pharmacists through email. We will receive appropriate tribal permissions and human protections to disseminate the survey and collect survey responses. Responses generated through Survey Monkey will then be analyzed using descriptive statistics in order to identify and distinguish providers' and pharmacists' perceptions regarding MAT.

Results: Pending

Conclusion: Pending

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-043

Poster Title: Use of telepharmacy in medication management of hypertension and diabetes in a veteran population to improve clinical outcomes

Primary Author: Meredith Thompson, Birmingham VA Medical Center, AL; **Email:** meredith.thompson@va.gov

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Purpose: Pharmacist involvement in the medication management of chronic disease states has been shown to be beneficial for patients. Additionally, telemedicine allows for more easily accessible medical care for veterans who are unable to maintain close follow-up with their primary care provider for chronic disease state management. Involving pharmacists in the interdisciplinary healthcare team through telemedicine helps ensure veteran patients do not fall through the cracks. The objective of this study is to evaluate how telepharmacy can improve clinical outcomes associated with hypertension and diabetes, utilizing appropriate and timely medication management within a veteran population.

Methods: Prior to initiation, this study will be submitted to the institutional review board for approval. This study consists of a retrospective and prospective review of patients enrolled in a program entitled "Care Coordination Home Telehealth" (CCHT). For the retrospective component, computerized patient medical records of veterans enrolled will be reviewed to assess for timely management of electronically submitted blood glucose (BG) and blood pressure (BP) values. The following outcomes will be assessed: time to medical intervention, number of medical interventions/changes performed, mean change in BP, BG or hemoglobin A1c, and number of adverse events experienced, if any. The prospective review will incorporate pharmacist-managed care through the use of telepharmacy. Patients receiving care under consenting providers will have telephone follow-up with authors of this study for medication management of hypertension and diabetes. Authors will review BP and BG values electronically submitted and perform an interview with patients via telephone. Timely follow-up will be provided and interventions will be made if necessary. The same data points will be collected as the retrospective portion of the study. The study will be conducted with application of

appropriate policies guided by ethical principles regarding all research involving human subjects.

Results: Results pending upon completion of research.

Conclusion: Data collection is currently ongoing and will be conveyed at the Southeastern Residency Conference.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-044

Poster Title: Establishment of a pharmacist-managed heart failure medication management clinic in a veteran population

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Purpose: The American Heart Association estimates that more than 1 million patients are hospitalized for a heart failure (HF) exacerbation annually, with readmission rates of 25% at 1 month and more than 50% at 6 months. Preventing readmission for HF has become a national priority. It has been found that a multi-disciplinary approach to management of HF improves clinical outcomes. Pharmacy and Cardiology at Birmingham VA Medical Center (BVAMC) have worked together to develop a service agreement establishing a pharmacist-managed heart failure medication management clinic in order to optimize heart failure therapy and reduce readmission rates.

Methods: This study will be submitted to the Institutional Review Board for approval. An admission list will be run daily to identify potential HF admissions. Patients admitted with a HF exacerbation will be educated while inpatient and offered close follow-up in the HF medication management clinic. If agreeable, these patients will be called within 48 to 96 hours of discharge to re-educate, assess HF symptoms, and confirm compliance. They will then be scheduled into clinic within 7 to 10 days of discharge for medication management and followed-up with as appropriate.
Readmission rates prior to establishment of the HF clinic, as well as 1, 3, and 6 months after clinic establishment will be determined. The following data will be collected in clinic and upon retrospective chart review: age, gender, vitals, ejection fraction, laboratory values, current medications, whether or not the patient was on guideline-directed treatment on enrollment into clinic, interventions made at clinic visits, and any readmission for heart failure within 6 months of clinic establishment.

The primary objective of this study is to determine the effect of participation in the newly established Clinical Pharmacy Cardiology Medication Management Clinic at BVAMC on heart failure readmission rates. As secondary endpoints we will evaluate interventions made and the impact of clinic participation on compliance, proportion of patients on guideline-recommended HF therapy, and HF symptoms.

Results: N/a

Conclusion: N/a

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-045

Poster Title: Supratherapeutic international normalized ratio (INR)? A retrospective chart review evaluating the potential interaction between azithromycin and warfarin

Primary Author: Charisma Caldwell, Birmingham VA Medical Center, AL; **Email:** charismak.caldwell@gmail.com

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Purpose: Current data shows that there is no known interaction between azithromycin and warfarin. According to the drug interaction study performed by Pfizer, the manufacturer of Zithromax®, there was no effect on the prothrombin time. Unlike other macrolides, azithromycin is less likely to cause drug interactions as it does not undergo hepatic metabolism. However, there have been case reports of supratherapeutic INRs associated with azithromycin in patients taking warfarin. The objective of this study is to determine if there is a true interaction between azithromycin and warfarin with potential to cause a supratherapeutic INR.

Methods: This study was submitted to the Institutional Review Board for approval. A retrospective chart review was conducted within a veteran population to identify those who were prescribed warfarin and azithromycin between August 2013 and August 2016. Patients considered to be clinically stable on warfarin (defined as having three consecutive therapeutic INRs) who had a concomitant short-term prescription for azithromycin were included in the study. Patients were excluded if they were receiving chronic azithromycin therapy, “new start” warfarin patients, and patient who did not have a therapeutic INR prior to azithromycin initiation. Patients meeting criteria were then evaluated to assess their azithromycin course and their stability on their warfarin regimen. Data recorded included patient demographics, warfarin dose, warfarin indication, azithromycin dose, azithromycin indication, duration of azithromycin therapy, contributing factors (vitamin k intake, alcohol intake, liver disease, liver function tests, and thyroid function tests), three months of INR levels prior to azithromycin initiation, one month of INR levels following azithromycin initiation, and the time frame between azithromycin initiation and subsequent INR. Primary outcome was incidence of supratherapeutic INR following azithromycin initiation. Secondary endpoints evaluated incidence of bleeding after azithromycin initiation and rate of hospitalization.

Results: This project is currently research-in-progress.

Conclusion: Data collection is currently ongoing and will be conveyed at the Southeastern Residency Conference.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-046

Poster Title: Effects of academic detailing on the treatment of urinary tract infections in a veteran population

Primary Author: William Edwards, Birmingham VA Medical Center, AL; **Email:** wze0001@auburn.edu

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Purpose: With urinary tract infections (UTI's) being one of the most common infectious diseases in the United States, evidence-based antibiotic therapy is essential for proper UTI treatment, antimicrobial stewardship, and decreasing antibiotic-induced adverse effects. Patients are often treated inappropriately for asymptomatic bacteriuria as outpatients and often will be treated for extended durations with broad-spectrum, empiric antibiotic coverage. In the VA population, most patients are elderly males who are at higher risk of UTI's when compared to younger males. Our study will evaluate the effects of provider education and use of a UTI treatment algorithm on UTI diagnosis and treatment of outpatients.

Methods: First, a retrospective analysis of outpatient urinary tract infection cases will be conducted. Specifically, we will be looking at the patient's symptoms, urine culture data, antibiotic selection and duration of therapy. We will implement a urinary tract infection treatment algorithm along with physician education related to the guideline-recommended treatment of urinary tract infection. Following these interventions, a prospective analysis of urinary tract infection treatment regimens will be completed to compare differences in treatment before and after academic detailing. With these results, we will also evaluate treatment success and antibiotic selection.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-047

Poster Title: Quality improvement project: usage of antipsychotic medications for the treatment of post-traumatic stress disorder (PTSD) in patients without severe mental illness

Primary Author: Jamie Chambers, Tuscaloosa VA Medical Center, AL; **Email:** jamie.chambers@va.gov

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Purpose: The purpose of this project is to identify and reduce the proportion of post-traumatic stress disorder (PTSD) patients without severe mental illness prescribed antipsychotics to PTSD patients not prescribed antipsychotics at the Tuscaloosa Veterans Affairs Medical Center to below the national average. The project will involve providing education to patients on the risks versus benefits of utilizing antipsychotics for the treatment of PTSD. It is our goal that through identification and education, providers will be encouraged to evaluate current patients who are prescribed an antipsychotic for PTSD to see if continued use of the medication is clinically warranted.

Methods: This study will be submitted to the Institutional Review Board for approval. The initial assessment will include obtaining a total number and list of actionable patients defined as having both a diagnosis of post-traumatic stress disorder (PTSD) without severe mental illness and an active medication order for an antipsychotic by utilizing the Real-Time Psychotropic Drug Safety Initiative (PDSI) dashboard and the computerized patient record system (CPRS). The project team will then educate providers on this initiative, the possible risks associated with antipsychotics, lack of supporting evidence of antipsychotics in PTSD, and alternative treatment options. An educational component highlighting the risks of using antipsychotics for treatment of PTSD will be implemented in the weekly pharmacist-led PTSD patient education groups. The final assessment will include obtaining an updated number of actionable patients monthly for four months following the completion of the provider education session and emailing the providers to determine if the additional education incited a change in local prescribing habits. The goal of this initiative is to determine whether or not this education can lower the percentage score of the Tuscaloosa Veterans Affairs Medical Center to below the national average on the PDSI dashboard.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-048

Poster Title: Quality improvement project: Therapeutic drug monitoring of lithium

Primary Author: Michelle Krichbaum, Tuscaloosa VA Medical Center, AL; **Email:** michelle.krichbaum@va.gov

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Purpose: Lithium's narrow therapeutic range and adverse drug events secondary to toxicity can be severe and life-threatening. The Department of Veterans Affairs (VA) recently issued a national bulletin focused on the issue of lithium safety, specifically in regards to routine monitoring of lithium serum concentrations as recommended by the Veterans Affairs/Department of Defense (VA/DOD) Clinical Practice Guideline for Management of Bipolar Disorder in Adults. The purpose of this project is to review the Tuscaloosa VA's adherence to the VA/DOD guidelines regarding lithium monitoring and to provide education to providers to improve the percentage of veterans receiving semiannual lithium lab draws.

Methods: This study will be submitted to the Institutional Review Board for approval. An electronic list of patients (age 19 and older) in the outpatient setting who meet the inclusion criteria of having an active lithium prescription will be generated from the Office of Mental Health Operations (OMHO) dashboard as part of the Psychotropic Drug Safety Initiative (PDSI). This list of patients will be reviewed for dates of most recent lithium serum concentrations and any changes in lithium doses. A recommended date for next lab draw will be generated for provider information. Data will be recorded and maintained confidentially. The VA Adverse Drug Events Reporting System (ADERS) will also be reviewed for lithium related adverse drug events. The next step will be to communicate these findings at an educational session with providers. Lastly, a chart review of patients on lithium will be re-conducted approximately 3 months post provider education session to assess for improvements.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-049

Poster Title: Comparison of insulin glargine versus insulin neutral protamine Hagedorn (NPH) on glycemic control and overall diabetic outcomes

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Purpose: The purpose of this project is to compare the effectiveness of insulin glargine vs. insulin neutral protamine Hagedorn (NPH) by assessing mean change in HgbA1C, fasting blood glucose changes, and hypoglycemic events. In addition overall diabetic outcomes will be assessed by comparing cardiovascular events, such as a myocardial infarction, in each group. The analyzed data will then be used to assess the clinical appropriateness of the long acting insulin consult currently being utilized at the Tuscaloosa VA Medical Center (TVAMC).

Methods: This project will be submitted to the Institutional Review Board for approval. This evaluation is a medication use evaluation which will be performed by conducting a retrospective chart review. Using predetermined criteria (delineated in protocol), the patients whom are receiving either insulin glargine or NPH from January 1st 2016 to June 1st 2016 will be identified and their charts evaluated. The charts will be reviewed for data including: HbgA1c, fasting blood glucose levels, hypoglycemic events (blood glucose < 70 or documented signs or symptoms of hypoglycemia in a note), total daily doses of either NPH or insulin glargine, other antidiabetic medications, and heart attack. This data will be assessed to determine any differences in glycemic control or diabetic outcomes between the two groups. The findings of this project could potentially streamline the process for obtaining insulin glargine and promote use of a clinically effective insulin product, when clinically indicated.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-050

Poster Title: Primary care provider-initiated screening of Veterans at high risk for hypoglycemia at Central Arkansas Veterans Healthcare System (CAVHS)

Primary Author: Kate O'Connor, Central Arkansas Veterans Healthcare System, AR; **Email:** katewoconnor@gmail.com

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Purpose: The Veterans Healthcare Administration first proposed the Hypoglycemia Safety Initiative in 2014 to target hypoglycemia safety via a patient-centered approach. Evidence suggests that hypoglycemia is often the result of intensive blood glucose control, and specific patient factors have been identified as increasing risk of hypoglycemia. Currently at the Central Arkansas Veterans Healthcare System (CAVHS), hypoglycemia is managed via a reactive rather than proactive approach. The purpose of this study is to improve and prevent hypoglycemia in the primary care setting in Veterans with diabetes mellitus who have documented risk factors for hypoglycemia.

Methods: This quality improvement project is a retrospective cohort study. Patients with diabetes mellitus who are currently enrolled in primary care services at CAVHS will be identified from the electronic medical record. Additional inclusion criteria are hemoglobin A1c (HbA1c) less than 7 percent in the last 18 months; an active prescription for insulin or a sulfonylurea; and either age greater than or equal to 75 years of age, a diagnosis of dementia or cognitive impairment in last 2 years, or serum creatinine greater than 1.7 milligram per deciliter in last 18 months. A list of identified patients will be provided to six designated primary care providers. The primary care provider will contact the patient, perform a hypoglycemia screen using a list of predetermined questions, and modify antihyperglycemic therapy as appropriate. Patient follow-up will be performed 1 month after the intervention using the same questionnaire. The primary outcome is the incidence of hypoglycemic events after the implementation of a provider-initiated hypoglycemia screening. Secondary outcomes include identification of patient-specific HbA1c goal, use of hyperglycemic therapy, and medication modifications. Diagnoses will be determined using ICD-9 and ICD-10 codes. Outcomes will be analyzed via

descriptive statistics. This study will be submitted to the facility's Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-051

Poster Title: Evaluation of oral antineoplastic waste at Central Arkansas Veterans Healthcare System

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Purpose: Oral antineoplastic agents are notoriously expensive, and prudent inventory management is warranted. Observations reveal that antineoplastic agents are occasionally refilled just prior to reevaluation of the patient's disease status and/or toxicity assessment leading to significant waste if therapy is discontinued or dose is changed. The purpose of this medication use evaluation (MUE) is to determine if oral antineoplastic agents are being filled within 10 days of planned restaging of disease and/or toxicity assessment which results in discontinuation of therapy or dose change.

Methods: The MUE will be a retrospective chart review of all patients who filled an oral antineoplastic agent from 1/1/2015 through 12/31/15. The project was approved by the MUE subcommittee at Central Arkansas Veterans Affairs Healthcare System (CAVHS). Data to be collected for each patient include the following: name of antineoplastic agent, reason for discontinuation or dose change. For patients whose therapy was discontinued or dose changed due to progression of disease or toxicity based on planned restaging evaluation or due to a planned assessment toxicity, the following data will be collected: diagnosis, date of last fill of oral antineoplastic agent, date of planned restaging evaluation or toxicity assessment, date of discontinuation or dose change of oral antineoplastic agent. If date of last fill is < 10 days before discontinuation/dose change, this instance will be counted as an opportunity to have prevented waste. If this issue is identified at CAVHS, methods to prevent this type of waste will be explored.

Results: n/a

Conclusion: n/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-052

Poster Title: Evaluation of appropriateness of proton pump inhibitors continued at discharge from a Veterans Health Administration hospital

Primary Author: Britney Cothren, Central Arkansas Veterans Healthcare System, AR; **Email:** britney.cothren@va.gov

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Purpose: Proton pump inhibitors (PPIs) are one of the most widely utilized medications in the United States healthcare system. A recent literature review revealed evidence that patients prescribed proton pump inhibitors during a hospital admission are often discharged on long term PPI therapy without a proper indication. Additionally, the growing concerns for adverse effects associated with chronic PPI therapy identify a need to limit the unnecessary use these medications. The purpose of this medication utilization evaluation is to assess appropriateness of continuation of proton pump inhibitors at discharge in a Veterans Health Administration hospital.

Methods: Patients who were discharged from Central Arkansas Veterans Healthcare System with an outpatient prescription for pantoprazole or omeprazole from January 1, 2015 to December 31, 2015 will be included in a retrospective medication use evaluation. Diagnoses will be gathered based upon International Classification of Diseases 9 and 10 codes to determine the presence of an indication for continued proton pump inhibitor therapy. Data obtained from the electronic medical record will be maintained confidentially without patient identifiers. Outcomes for this project include the number of patients discharged with a PPI prescription and the presence of an appropriate indication for continued PPI therapy.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-053

Poster Title: Assessment of a pharmacist-run new patient clinic at a Veterans Health Administration hospital.

Primary Author: Kelsey Van Gorkom, Central Arkansas Veterans Healthcare System, AR; **Email:** kelsey.vangorkom@gmail.com

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Purpose: Access to care is a problem all across healthcare. Increasing access is a prime opportunity for pharmacists because of our extensive training in medication therapy, particularly in chronic disease state management, and experience in formulary management. A new patient intake clinic was implemented at our facility in June 2016 to increase access to care and ease the transition from non-VA to VA primary care for patients. The purpose of this study is to assess the impact and cost-savings of this new service.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have been contacted by the New Patient Clinic between June 16th, 2016 and March 31st, 2017. Data on encounters completed in the New Patient Clinic will be collected by the clinical application coordinator and reported confidentially to the primary author, who will conduct chart reviews to gather the remainder of the information. Access to the data will be limited to study investigators only. The following data will be collected using retrospective patient chart review: patient age, gender, number of medications at intake visit, number of Beers List medications at intake visit, medications changed to formulary options, dose adjustments made by pharmacists, medications discontinued, and Beers List medications discontinued. Percentages of medications converted to formulary, medications discontinued, Beers List medications discontinued, and dose adjustments made will be calculated. Cost savings from changing to formulary options and discontinuing medications will be calculated as projected annual cost-savings in dollars.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-054

Poster Title: Mirtazapine and megestrol use for appetite stimulus in the older Veteran population

Primary Author: Megan Fenney, Central Arkansas Veterans Healthcare System, AR; **Email:** meganmfenney@gmail.com

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Purpose: Currently there is a lack of data and guidelines about the use of appetite stimulants in older adults with unintentional weight loss. At the Central Arkansas Veterans Healthcare System the most commonly prescribed appetite stimulants are mirtazapine and megestrol. Therefore, the objective of this study is to determine whether or not mirtazapine and megestrol lead to an increase in weight gain over a 4 and 12 week period in the Veteran population 65 years and older with unintentional weight loss.

Methods: This study will be conducted via retrospective chart review. Patients will be chosen based on being prescribed mirtazapine or megestrol due to unintentional weight loss. Those diagnosed with cancer, HIV/AIDS, end stage renal disease on dialysis, or receiving palliative care will be excluded. Weights will be collected at baseline, 4 weeks, and 12 weeks to determine if these medications are improving weights. Information pertaining to other methods previously tried, underlying causes, and side effects will also be collected. All data will be recorded without patient identifiers in order to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-055

Poster Title: Impact of serum procalcitonin monitoring on sepsis and pneumonia outcomes

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Purpose: Procalcitonin, a biomarker of bacterial infection, has previously been shown to be beneficial in guiding antibiotic therapy in hospitalized patients. Studied most extensively in pneumonia or sepsis, procalcitonin is strongly correlated to the extent and severity of bacterial infection. The Central Arkansas Veterans Healthcare System began utilizing the serum procalcitonin assay in February 2016. The purpose of this project is to assess the appropriate utilization of procalcitonin assays obtained in patients with pneumonia or sepsis at our facility.

Methods: This retrospective chart review will include patients at least 18 years of age with a diagnosis of sepsis or pneumonia and more than one procalcitonin level from February 16, 2016 to August 16, 2016. Diagnoses will be determined based on the International Classification of Diseases 9 and 10 codes, and data will be extracted from the electronic medical record. Patients with less than 2 procalcitonin levels, death within 72 hours of admission, chronic antibiotic use, non-bacterial infections, and a diagnosis other than sepsis or pneumonia will be excluded. The following data will be collected: age, gender, length of stay, primary diagnosis, diagnostic criteria for pneumonia or sepsis, serum procalcitonin, and antibiotic use. Data obtained will be maintained confidentially without patient identifiers. Outcomes include the number of procalcitonin levels drawn, duration of antibiotics, number of antibiotic medications prescribed, de-escalation of therapy, cessation of therapy, and length of hospitalization for each patient. Outcomes will be analyzed using descriptive statistics. A cost savings analysis will also be conducted.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-056

Poster Title: Evaluation on the appropriateness of benzodiazepine use amongst veterans in primary care

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Purpose: Benzodiazepines are among the most commonly prescribed of all medication, and this class is correlated with significant negative outcomes like physical dependence, abuse, and central nervous system depression. The objective of this project is to assess the appropriate usage of benzodiazepines in a primary care setting through documentation of approved indications, presence of contraindications, Posttraumatic Stress Disorder, usage in veterans age 65 years and older, concurrent opioid use, and utilization for greater than three months.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review of 200 outpatient veterans will be conducted to determine prescribing practices and appropriateness of benzodiazepine usage. The following data will be collected: patient's gender, whether a benzodiazepine was prescribed or refilled at the primary care visit, any contraindications to benzodiazepine use, diagnosis of Posttraumatic Stress Disorder, concurrent use with opioids, and benzodiazepine use greater than three months. The following patients will not be included: receiving benzodiazepines in inpatient, acute care settings, mental health admissions during study period, or documented history of substance abuse. The data collected will be analyzed to identify the most common inappropriate prescribing habits in the outpatient primary care setting. Investigators will use the results to create and implement a multidisciplinary education initiative at the end of 2016 and the beginning of 2017.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-057

Poster Title: Evaluating use of a deprescribing protocol and blister packaging for elder Native Americans at increased risk of non-adherence and poor outcomes due to polypharmacy

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Purpose: Care goals change as patients age. For elder patients, complex medication regimens are difficult to remain adherent to and may no longer be appropriate. Deprescribing protocols may be enacted when the provider and patient agree that a medication may be systematically removed from a drug regimen based on specific safety and efficacy factors. Adherence is also an issue for all patients on chronic medications, with about 50% adherence among elders. In order to simplify understanding medication regimens and create a visual reminder, blister packaging may play a role in increasing medication adherence among elder patients.

Methods: This project aims to establish the use of a deprescribing protocol for elder patients and provide adherence blister packaged medications to those that may benefit most. A pharmacist will perform a medication review at the referral of a primary care clinic provider for any elder patients over 65 years old. The care team of the provider, pharmacist, patient, and caregivers will agree upon a plan for safely removing inappropriate medications from the regimen. The pharmacist will follow up with the patient during the deprescribing protocol and monitor for adverse events. Patients will be offered medication refills in an adherence reminder blister package if they meet the following criteria: over 65 years old, five or more chronic medications, lack of full time aid or family care, and a history of nonadherence through chart evaluation. The use of blister packaging will be integrated into the outpatient pharmacy work flow. Patients on stable chronic medications and their caregivers will receive education on the use of the adherence blister package. To evaluate adherence, patients will return their used blister packages each month in exchange for their refills in order to calculate missed doses. Patients will also be followed for the duration of the study for hospital admissions and health

outcomes based on chronic conditions, such as changes from baseline in A1c or blood pressure, through chart reviews.

Results: NA

Conclusion: NA

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 1-058

Poster Title: Retrospective analysis of adherence to aromatase-Inhibitor therapy and correlates to early discontinuation of therapy in American Indian and Alaska Native women with breast cancer

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Purpose: Although the incidence of breast cancer is lowest among American Indian and Alaska Native women compared to all other ethnic groups, the mortality rate in this ethnic group is highest per incident observed. Currently, there is limited data regarding adherence rates to aromatase inhibitor therapy among American Indian and Alaska Native women. The objective of this study is to determine how many breast cancer patients who initiated aromatase inhibitor therapy discontinued early and to evaluate adherence in patients who persisted with therapy. A secondary objective will be to identity possible risk factors which may correlate to early discontinuation of therapy.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a retrospective chart review from 1/1/2006 to 1/1/2016 using electronic medical records. All post-menopausal women that were newly prescribed aromatase inhibitors in the specified time frame and receiving care in the Phoenix Indian Medical Center (PIMC) oncology clinic will be reviewed. There will be no direct patient contact and no individual consents obtained. The data set for this study will be created with the assistance of a PIMC data specialist. All data will be stored in a password protected Excel spreadsheet with minimal patient identifiers. Data will be collected from electronic health records of the patients that meet the criteria for the chart review. Data will include demographic data, adverse drug reactions (ADR's), descriptions of ADR's, specific aromatase inhibitor used, total time on aromatase inhibitor therapy, time to discontinuation of therapy and additional therapy or steps taken to aid with side effects.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-059

Poster Title: Assessment of real-world effectiveness and safety of glucagon-like peptide-1 receptor agonists for treatment of type 2 diabetes in a veteran population

Primary Author: Anthony Albert, Phoenix VA Health Care System, AZ; **Email:** anthony.albert@va.gov

Additional Author (s):
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Purpose: The American Diabetes Association guidelines recognize metformin as the gold-standard for patients with type-2 diabetes due to effectiveness and safety profiles. If specific A1c targets are not achieved after at least 3 months of monotherapy, additional agent(s) may be added to patient's regimens, including glucagon-like peptide-1 receptor agonists. Studies have shown a typical A1c reduction of 1 to 1.5 percent with the addition of these agents, however, formulary restrictions may limit use. The purpose of this study is to evaluate clinical outcomes in patients with diabetes with the addition of these agents at a veterans' institution.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be completed at the Carl T. Hayden Veterans Affairs Medical Center. Males and females 18 years of age or older with a diagnosis of type 2 diabetes mellitus on at least 2 anti-hyperglycemic agents (including a glucagon-like peptide-1 receptor agonist) will be included in this analysis. Patients on a glucagon-like peptide-1 receptor agonist for at least three months of stable therapy in addition to pre-existing anti-hyperglycemic regimens will be evaluated. The primary outcome of this study is to assess a change in A1c with addition of glucagon-like peptide-1 receptor agonists in this patient population. A1c values will be evaluated at baseline, six months, and one year time intervals as available. Secondary outcomes will include changes in weight, rates of clinically significant adverse events (pancreatitis, medullary thyroid tumors) over the entire study period and drug discontinuation within three months of initiating therapy. A paired t-test will be used to analyze primary and secondary outcomes. Descriptive and inferential statistics will be used to evaluate demographic data.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-060

Poster Title: Allopurinol dosing and the effect of uric acid levels to prevent acute gout flares

Primary Author: Courtney Corcoran, Phoenix VA Health Care System, AZ; **Email:** courtney.corcoran@va.gov

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Purpose: Gout is a debilitating form of arthritis that is caused by crystallization of uric acid in the joints. The American College of Rheumatology guidelines recommend a reduction of serum uric acid (UA) to less than 6mg/dL to prevent relapse of gouty flares. The purpose of this retrospective study is to evaluate the treatment of gout within the Phoenix VA Healthcare System in order to determine if patients have been receiving optimal therapy.

Methods: This study is pending approval from the Institutional Review Board. Subjects will be pulled from a computerized patient record system which will identify those who have a clinical diagnosis of gout being started on allopurinol between January 1, 2012 and December 31, 2012. The following data will be collected: age, gender, ethnicity, allopurinol initiation dose, titrated allopurinol dose, uric acid levels at baseline/during titration/after 6 months, and number of recurring flares after starting urate lowering therapy. Subjects will not be reviewed if they were being treated for active cancer while using allopurinol, managed by non-VA providers, or prescribed xanthine oxidase inhibitors other than allopurinol. The primary endpoint of this study will be to compare the number of gouty flares that occur when serum uric acid levels are above or below 6 mg/dL.

Results: To be presented at the conclusion of the study.

Conclusion: To be presented at the conclusion of the study.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-061

Poster Title: Evaluation of clinical outcomes using a procalcitonin-guided treatment protocol for acute COPD exacerbations

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Purpose: Current guidelines recommend the use of antimicrobial agents in all patients admitted for chronic obstructive pulmonary disease (COPD) exacerbation. However, current literature reveals that many of these exacerbations may be non-bacterial in origin. A paucity of literature has demonstrated the utility of the biomarker procalcitonin in differentiating between bacterial and non-bacterial causes of COPD exacerbations. The purpose of this study is to evaluate a procalcitonin-guided treatment protocol in veteran subjects admitted with acute exacerbation of COPD.

Methods: This prospective, randomized, controlled study will be submitted to the institutional review board for approval. The electronic medical record will be used to identify subjects who have been admitted with acute COPD exacerbation. Subjects who consent to participate in the study will have a procalcitonin level determined by the laboratory using a point-of-care testing method. Subjects will then be randomized to one group receiving the standard of care based on current guidelines (including antimicrobials, systemic corticosteroids, and inhaled bronchodilators); the second group will receive care based on procalcitonin level. Subjects with procalcitonin levels less than 0.1 nanograms/milliliter will receive systemic corticosteroids and bronchodilators only. Subjects with procalcitonin levels greater than or equal to 0.1 nanograms/milliliter will receive standard care based on current guidelines, including antibiotics. Outcome measures will include utilization of the healthcare system for worsening or persistent COPD symptoms at 30 and 90 days after discharge, antibiotic-related adverse events, and overall utilization of antimicrobials.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-062

Poster Title: Short and long term effects of clinical pharmacy management on type 2 diabetes treatment outcomes in an ambulatory care setting

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Purpose: In 2012 uncontrolled type 2 diabetes mellitus (DM) affected 27.85 million people (8.9%) in the United States population alone. Poorly controlled type 2 DM puts patients at risk for cardiovascular disease related deaths, increased stroke occurrence, nephrotic deterioration, and increased risk of limb amputations. Studies have shown that uncontrolled type 2 DM can be managed well with interventions from pharmacy based ambulatory care clinics. This research project aims to demonstrate the long-term effects that ambulatory care pharmacy interventions have on the maintenance of patient hemoglobin A1C goals after discharge from a pharmacy clinic.

Methods: This study will be submitted to the Institutional Review Board for approval and is a retrospective chart review. The primary objective of this study is to determine the median time it takes for patients in Pharmacy Patient Aligned Care Team (PACT) clinics to reach their provider specified A1C goals. The study will also measure the time that patients remain at A1C goals after discharge from Pharmacy PACT clinics and identify which patients are at target A1C goals 1-year post discharge from their pharmacy clinics. The electronic medical record system will identify patients who have had at least 2 Pharmacy PACT Therapy Management notes and who have uncontrolled type 2 DM defined as A1C > 8% at the index date. The following data will be collected: A1C (index date, date of discharge from the clinic, and 1 year from discharge date), age, gender, ethnicity, race, number of clinic visits, number of DM medications at the start and end of study period, date of first and last Pharmacy PACT Therapy Management note, and method by which patients were referred to pharmacy clinic (e.g. referral from provider,

primary care almanac). After the data is collected, descriptive statistics will be conducted to identify the significance of clinical interventions from index date to 1 year after discharge from Pharmacy PACT clinic.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-063

Poster Title: Assessment of efficacy and safety of dipeptidyl peptidase 4 inhibitors and sodium-glucose cotransporter 2 inhibitors for treatment of type 2 diabetes in a veteran population

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Additional Author (s):
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Niru Gupta

Purpose: American Diabetes Association guidelines recognizes metformin as the gold-standard for type 2 diabetes patients due to efficacy and safety profiles. If specific A1c targets are not achieved after at least three months of monotherapy, additional agent(s) may be added to patient's regimens, including dipeptidyl peptidase 4 inhibitors and sodium-glucose cotransporter 2 inhibitors. Studies have shown an A1c reduction of 0.5 to 1.1 percent with the addition of these agents, however, formulary restrictions limits use in many institutions. The purpose of this study is to evaluate clinical outcomes in diabetes patients with the addition of these agents at a veterans' institution.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be completed at the Carl T. Hayden Veterans Affairs Medical Center. Males and females 18 years of age or older with a diagnosis of type 2 diabetes mellitus on at least 1 anti-hyperglycemic agent will be included in this analysis. Patients on novel agents, defined as dipeptidyl peptidase 4 inhibitors or sodium-glucose cotransporter 2 inhibitors for at least three months of stable therapy in addition to pre-existing diabetic regimens will be evaluated. The primary outcome of this study is to assess a change in A1c with addition of novel agents in this patient population. A1c values will be measured at baseline, six months, and one year time intervals. Secondary outcomes will include changes in weight, rates of clinically significant adverse events (pancreatitis, admissions for diabetic ketoacidosis, changes in renal function, urinary tract infections/genital mycotic infections) intolerability, and drug discontinuation within three months of initiating therapy. A paired t-test will be used to analyze primary and secondary outcomes. Descriptive and inferential statistics will be used to evaluate demographic data.

Results: To be presented at the conclusion of this study.

Conclusion: To be presented at the conclusion of this study.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-064

Poster Title: Safety and effectiveness of very low low density lipoprotein (LDL) in a veteran population

Primary Author: Morgan Robertson, Southern Arizona VA Health Care System, AZ; **Email:** mmr1@email.arizona.edu

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Purpose: The 2013 ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults advises clinicians to consider decreasing a statin dose if two consecutive values of low density lipoprotein (LDL) are less than 40 mg/dL, but do not provide further recommendations regarding initiation of statin therapy in these subjects. This retrospective chart review aims to determine the safety and effectiveness of statin use in veterans with an LDL less than 40 mg/dL.

Methods: Veterans with at least four LDL levels less than 40 mg/dL at the Southern Arizona VA Health Care System (SAVAHCS) between January 1, 2000 and September 1, 2011 will be evaluated. The primary outcome will be a composite of cardiovascular (CV) related death, myocardial infarction (MI), and cerebrovascular accidents (CVA). The primary outcome will be compared between statin and non-statin users with chi-square analysis. Secondary outcomes will include time to first event (CV related death, MI or CVA), death from any cause, hospital admissions for unstable angina, incidence of rhabdomyolysis, and adverse drug reactions to statins.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-065

Poster Title: Perioperative bridging in atrial fibrillation subjects on concomitant warfarin therapy

Primary Author: Elizabeth Jing, Southern Arizona VA Health Care System, AZ; **Email:** elizabeth.jing@va.gov

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Jonathan Merchen

Purpose: Much of the recent literature on bridging in atrial fibrillation patients focuses on patients with low to moderate risk of stroke. In these studies, bridging was found to cause more major bleeding with no additional benefits compared to no bridging. Nonetheless, the 2012 CHEST guideline recommends bridging atrial fibrillation patients receiving temporary warfarin interruption if the patient is at high risk for stroke. As such, current practice at many hospitals reflected that recommendation. This study aims to assess the safety and efficacy of bridging in high risk atrial fibrillation patients requiring temporary warfarin interruption.

Methods: This is a retrospective study analyzing the electronic health record of patients who received their care at the Southern Arizona VA Healthcare System between October 1999 and August 2016. Subjects were identified based on concomitant International Classification of Diseases Codes for either a stroke or transient ischemic attack, history of warfarin use, and a history of inpatient surgical or procedural interventions. The efficacy and safety of bridging will be analyzed by comparing the frequency of bleeds and thrombus in subjects who were bridged versus not bridged. Statistical significance will be analyzed using Chi-Square tests.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-066

Poster Title: Morphine use in patients with ST-elevation myocardial infarctions (STEMI) and non-ST-elevation myocardial infarctions (NSTEMI) undergoing percutaneous coronary interventions

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Purpose: Morphine has been used as part of the initial management of patients with myocardial infarctions for many decades. However, recent studies suggest that morphine use may be associated with adverse outcomes in this patient population. In-vitro studies imply a potential drug-to-drug interaction between morphine and P2Y12 inhibitors that may render P2Y12 inhibitors less effective. The purpose of the study is to evaluate the outcomes of subjects diagnosed with myocardial infarction who were given morphine in addition to a P2Y12 inhibitor within 24 hours before undergoing percutaneous coronary intervention.

Methods: This is a retrospective one-year study that will focus on chart reviews of veterans age≥18 with ICD-9 and ICD-10 documented diagnoses of ST-elevation myocardial infarction (STEMI) or non-ST-elevation myocardial infarction (NSTEMI) who underwent percutaneous coronary interventions and received a P2Y12 inhibitor within 24 hours prior to the procedure. Subjects will be divided into two cohorts based on whether or not they received morphine in addition to the P2Y12 inhibitor. They will be followed for 30 days from the day of their procedure. The following baseline data will be collected: age, gender, cardiovascular risk factors, use of heparin, aspirin, nitroglycerin, or beta blockers during hospitalization, outpatient morphine prescription within last 30 days , and ventricular assist device use during percutaneous coronary intervention. Cardiology, medicine, and primary care progress notes will be reviewed to determine if any of the following adverse outcomes occurred during the 30-day follow up period: death, post-admission myocardial infarction, cardiogenic shock, new onset heart failure, or a composite outcome of death or myocardial infarction.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-067

Poster Title: Assessing safety of dual alpha-blockers in PTSD

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Purpose: Prazosin is a centrally active alpha1-blocker that works to counteract the excessive brain noradrenergic activity reported in posttraumatic stress disorder (PTSD). Another condition that is a concern for this aging veteran population is benign prostatic hyperplasia (BPH), for which the primary treatment is an alpha1-blocker, such as doxazosin, terazosin, alfuzosin, or tamsulosin. Studies have not been conducted to determine the safety of prescribing prazosin and another alpha1-blocker when treating veterans with PTSD and BPH. This retrospective study will evaluate the safety and tolerability of prazosin and another α-blocker in the treatment of PTSD and BPH.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record will identify male Veterans diagnosed with PTSD and BPH at the Southern Arizona VA Health Care System (SAVAHCS) who were prescribed prazosin and another alpha1-blocker concurrently at any time between August 1, 2010 to August 1, 2015. The following data will be collected: age at the time of initiation of overlap of therapy, indication for each alpha1-blocker, if the patient has hypertension, number of antihypertensive medications, and reason for discontinuation if applicable. Provider documentation will be reviewed to determine reasons for discontinuation. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-068

Poster Title: Evaluation of the effectiveness and safety of pharmacological intervention versus no pharmacological intervention for the treatment of delirium in hospitalized veterans

Primary Author: Krista Noll, Southern Arizona VA Health Care System, AZ; **Email:** krista.noll2@va.gov

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Purpose: Delirium is a prevalent complication that occurs in up to 80 percent of hospitalized patients and can result in negative outcomes including increased mortality. Both pharmacological and nonpharmacological interventions have been used to reduce severity and duration of delirium. Antipsychotics have been used for delirium treatment in hospitalized patients, and recent evidence has shown that melatonin may be an effective agent too. However, there is inconclusive evidence among studies evaluating these agents and no general consensus in guiding therapy. This study aims to evaluate the effectiveness and safety of pharmacological intervention versus no pharmacologic intervention for hospitalized veterans with delirium.

Methods: A retrospective review of up to 500 charts will be conducted to evaluate the use of antipsychotics (quetiapine, olanzapine, risperidone, aripiprazole, haloperidol) and/or melatonin for the treatment of delirium in hospitalized veterans aged 18 years or older from October 1, 1998 to August 1, 2016. Veterans will be excluded if they had an outpatient prescription for an antipsychotic or melatonin in the 90 days prior to hospital admission. Length of hospital stay and length of intensive care unit (ICU) stay (if applicable) will be used to evaluate the effectiveness of pharmacological treatment in these veterans. Other variables for collection include delirium risk factors, treatment factors, and adverse effects.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-069

Poster Title: Twice Daily Lisinopril in Chronic Kidney Disease (TDL in CKD Trial)

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Purpose: Evidence-based treatment guidelines recommend angiotensin converting enzyme inhibitors in chronic kidney disease (CKD) to preserve renal function and delay the progression of end organ damage. Lisinopril is traditionally dosed once daily despite its documented 12 hour half-life. Based on its pharmacokinetics, it may be reasonable to dose twice daily to achieve optimal results. This study primarily aims to demonstrate twice daily lisinopril reduces the number of patients whose serum creatinine doubles over a four year period. In a retrospective, cohort study, adult Veterans with CKD Stage II-IV, documented serum creatinine and new prescription for lisinopril will be randomized for review.

Methods: A database search will be performed to identify subjects with new outpatient lisinopril prescriptions at Southern Arizona VA Health Care System between January 2001 and January 2011. An estimated 180 patients will be included in the study. Patients will be divided into two groups: one group which received once daily dosing (n = 90), and another group received twice daily dosing (n = 90). The serum creatinine (SCr) at baseline and four years later will be recorded and analyzed to determine if doubling occurred. Other outcomes to be measured if available include change in estimated glomerular filtration rate (eGFR), change in urine albumin-creatinine ratio (UACR), need for hemodialysis and reported adverse drug reactions (ADRs). It is hypothesized that twice daily lisinopril dosing will reduce the number of subjects whose SCr doubles over four years.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Evaluative Study

Session-Board Number: 1-070

Poster Title: Incidence of venous thromboembolism in surgical oncology patients

Primary Author: Brian Do, Southern Arizona VA Health Care System, AZ; **Email:** bcdo411@gmail.com

Additional Author (s):
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Purpose: Oncology patients undergoing abdominal or pelvic surgeries are at high-risk of developing postoperative venous thromboembolism (VTE). Current guidelines published by the American Society of Clinical Oncology (ASCO), National Comprehensive Cancer Network (NCCN), and American College of Chest Physicians (ACCP) recommend at least 4 weeks of pharmacologic thromboprophylaxis postoperatively in high-risk oncology patients. The purpose of this study was to assess the incidence of VTE in high-risk surgical oncology patients at a Veterans Affairs institution.

Methods: The institutional review board approved this retrospective study. Electronic medical records were utilized to identify oncology patients aged 18 to 89 years old undergoing general or urologic surgeries from June 1, 2013 to June 30, 2015. The primary objective was the incidence of VTE up to 30 days postoperatively in patients receiving optimal (OT) (4 weeks of anticoagulation if no contraindications) versus suboptimal (ST) thromboprophylaxis. Secondary objectives included incidence of early (days 0 to 7) and late (days 8 to 30) postoperative VTE, severity of VTE, and hematologic toxicities associated with VTE prophylaxis.

Results: A total of 167 patients were assessed (136 patients in the ST group and 31 patients in the OT group). There were 4 (2.9 percent) and 1 (3.2 percent) VTEs in the ST and OT groups, respectively (OR = 0.10; 95 percent CI, negative 2.13 to 2.32; P greater than 0.05). All VTEs occurred during the late postoperative period. In the ST group, 3 patients had an uncomplicated pulmonary embolism (PE) or deep venous thromboembolism and 1 patient died due to thromboembolic complications. In the OT group, 1 patient had an uncomplicated PE. There were no significant differences in postoperative bleeding (11.4 percent versus 14.4

percent) or thrombocytopenia (45.7 percent versus 47.4 percent) in patients receiving pharmacologic versus non-pharmacologic thromboprophylaxis.

Conclusion: Provision of optimal thromboprophylaxis was low for high-risk surgical oncology patients; however this was not associated with an increase in VTEs. Use of pharmacologic thromboprophylaxis did not increase rates of bleeding or thrombocytopenia. Education is needed to increase compliance with guideline recommendations for postoperative thromboprophylaxis in high-risk surgical oncology patients at our institution.

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 1-071

Poster Title: Therapy sequencing and its impact on clinical outcomes in castrate resistant prostate cancer

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Purpose: Treatment of castrate resistant prostate cancer has evolved over recent years with the introduction of several new therapeutic agents, including enzalutamide and abiraterone. This study is aimed to examine the clinical outcomes of different sequences of castrate resistant prostate cancer treatment and to elucidate whether there is an optimal sequence in which to give the first line agents.

Methods: The study will be submitted to the Institutional Review Board for approval. The study will be conducted as a retrospective chart review spanning from January 1, 2011 to July 1, 2016. Veterans who are identified as at least 18 years old, with an ICD-9 or 10 code documented for prostate cancer diagnosis, disease that was documented to be castrate resistant, and who had received at least one dose of either enzalutamide, abiraterone or docetaxel will be included in this study. The primary clinical outcome of the study is the duration of response to each treatment received. The secondary clinical outcome is the number of subjects who experienced a greater than or equal to fifty percent decline of prostate specific antigen from baseline as a result of treatment. Data to be collected includes patient age, gleason score, serum prostate specific antigen and testosterone level at baseline, nadir, and time of treatment discontinuation, reason for treatment discontinuation, and duration of response. Statistical analysis will consist of one-way ANOVA for the primary outcome and Fisher's exact test for the secondary outcome.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-072

Poster Title: Clinical characteristics of Clostridium difficile-associated diarrhea (CDAD) among the Veteran population.

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Purpose: This retrospective cohort study will evaluate correlation between positive Clostridium difficile (C. difficile) tests and type of antibiotic use, duration of antibiotic treatment, length of stay, documented penicillin allergy, and other factors that may increase the burden of C. difficile associated diarrhea (CDAD) for the Veterans at the Southern Arizona VA Health Care System (SAVAHCS).

Methods: Veterans admitted to the Southern Arizona VA Health Care System (SAVAHCS) who had a positive primary or secondary C. difficile polymerase chain reaction (PCR) result between July 31, 2015 and July 31, 2016 will be evaluated. The primary outcomes will be specific antimicrobial agent selected, duration of antimicrobial treatment, and whether diagnosis is a primary occurrence or recurrence. Secondary outcomes will include length of hospital stay, admission diagnosis, and presence of penicillin allergy recorded in the electronic health record.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-073

Poster Title: Implementation of a specialized pharmacy-based chronic non-cancer pain management clinic at an Indian Health Service facility in northern Arizona

Primary Author: Kimberly Frantz, Tuba City Regional Health Care Corporation, AZ; **Email:** kimberly.frantz@tchealth.org

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Purpose: Native Americans possess certain risk factors that make them more likely to experience chronic pain. Therefore, this population is particularly vulnerable to the adverse effects of opioid medications. Several Indian Health Service facilities that have established pharmacy-based chronic pain clinics have reported success in improving patient outcomes. The primary objective is to establish a specialized pharmacy-based chronic non-cancer pain (CNCP) management clinic in order to optimize pain management regimens and decrease the incidence of opioid-related adverse effects. Secondary objectives are to facilitate safe medication use, align prescribing practices with current guidelines, and support providers in the burden of managing CNCP.

Methods: Pharmacists who are credentialed providers and have completed more in-depth training in pain management will operate this clinic under a collaborative practice agreement with medical staff. Training includes a certificate program on the pathophysiology, assessment, and management of pain, continuing education hours related to pain management, and a number of supervised practice visits in this area.
Inclusion and exclusion criteria will be defined in order to identify CNCP patients at increased risk for opioid-related adverse effects. Patients who meet these criteria will be referred by their primary care physicians to the pharmacy-based CNCP management clinic. Clinic visits will consist of pharmacist assessment of pain control using validated assessment tools, along with pharmacist assessment of side effects, treatment goals, medication usage patterns, and adherence to the treatment plan. Utilizing standardized policies and protocols for pain management, the pharmacist will determine an appropriate pain management plan. This plan will be communicated with the primary care physician upon completion of each visit.

This study will measure outcomes as follows: patient pain scores, measures of functionality and goals as defined by the patient, and patient and provider satisfaction surveys. Although this study is exempt from IRB review, the Pharmacy and Therapeutics Committee, Medical Executive Committee, and Tuba City Regional Health Care Corporation Governing Board will review it prior to implementation.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-074

Poster Title: Multidisciplinary Heart Failure Clinic in a small, rural hospital

Primary Author: Kristen Parker, Whiteriver Indian Hospital, AZ; **Email:** kristen.parker@ihs.gov

Additional Author (s):
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Purpose: Heart failure (HF) is a complex clinical syndrome which accounts for significant morbidity, mortality and negatively impacts quality of life. Prevalence of HF among Native Americans ages 60-79 is approximately 1.8 times higher than the general United States population. The objective of this project is to improve patient care by providing greater accessibility and continuity of care through HF disease management services. Studies show HF management programs effectively increase use of recommended medications, reduce hospitalizations and improve patient quality of life. In this multidisciplinary clinic, services will focus on medication management, patient education for self-management and coordination of care.

Methods: Patients who have previous or new HF diagnosis from September 2014 through September 2016 will be identified through the electronic health record. Chart reviews of these patients will be performed to determine the percent of patients on target medication therapy, mortality rate and number of HF-related emergency room visits and hospitalizations before implementation of the clinic. The multidisciplinary HF clinic team will include the PGY1 pharmacy resident, a pharmacist, an internal medicine physician and a cardiologist. Patients will be referred by their primary care providers or cardiologist to the HF clinic for disease management. This will include titration of medications to recommended target doses per current 2013 American College of Cardiology Foundation/American Heart Association guidelines following an evidence-based protocol. Upon admission to the clinic, patients will complete an initial HF functional assessment and quality of life (QOL) questionnaire which will be repeated after 3-6 months in the clinic. Primary outcomes measured will include percent of patients receiving recommended medications and percent of patients at target doses of medications. Secondary outcomes will include all-cause mortality rate, rate of HF-related

emergency room visits or hospitalizations, percent of patients with documented echocardiogram in the past year, change in patient functional status in heart failure by New York Heart Association Class and change in QOL assessment.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-075

Poster Title: Evaluation of energy drink consumption on electrocardiographic, vascular, and hemodynamic parameters in young healthy volunteers: A randomized, double blind, controlled, clinical trial

Primary Author: Sarah Kelly, David Grant Medical Center, CA; **Email:** sarahekelly3@gmail.com

Additional Author (s):
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Purpose: Energy drinks have been linked to emergency room visits and over 30 deaths. A large number of adverse events have been cardiovascular in nature. The purpose of this study is to determine if caffeinated energy drinks change the QTc interval, blood clotting time, and central and peripheral systolic blood pressures compared to an active and placebo control.

Methods: The Institutional Review board approved this randomized, double blind, active-controlled, crossover study. Fifty healthy volunteers aged 18-40 who provide informed consent will be enrolled. Volunteers with any clinically significant medical conditions including pregnancy or breastfeeding will be excluded. In addition, patients who have blood pressure greater than 140/90, hypokalemia, liver abnormalities, or take a medication more than twice weekly will be excluded. A baseline electrocardiogram (ECG), serum potassium level, liver function tests, and peripheral blood pressure will be obtained to make sure no underlying medical conditions exist. On three separate days (days 1, 8, 15), either the energy drink, active control (moxifloxacin) drink, or placebo control drink will be given. People who meet inclusion and exclusion criteria will be instructed to fast twelve hours and abstain from caffeinated substances for 48 hours before day one, day eight, and day fifteen when data will be collected. At each session, baseline ECG and peripheral and central blood pressures will be obtained as well as at hours 1, 2, 4, and 6 after consuming the study drink. Clotting time will be analyzed at baseline and two hours after drink consumption. Data will be analyzed using a repeated measures Analysis of Variance (ANOVA) with Bonferroni post-hoc analysis if needed.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-076

Poster Title: Impact of Combination Ranolazine and Class III Antiarrhythmic Use on ECG Parameters

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Additional Author (s):

Purpose: Ranolazine is an antianginal with properties of an antiarrhythmic agent. Ranolazine prolongs the QT interval by 6msec, making it controversial to use in conjunction with other QT prolonging agents. However, recent studies have indicated that ranolazine in combination with a class III antiarrhythmic may lead to better arrhythmia control. This may be possible as the combination does not significantly impact transmural dispersion of repolarization (TDR) which is a better indicator of the risk of developing life threatening arrhythmias. This study will assess TDR in patients taking ranolazine plus a class III antiarrhythmic.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients from 2005-2015 who have taken ranolazine plus a class III antiarrhythmic (amiodarone, dronedarone, dofetilide, sotalol) concomitantly for at least 90 days. The primary endpoints will be the corrected QT interval and TDR before and after combination therapy. The following data will be collected: patient age, gender, ethnicity, current medications, and past medical history. A 12-lead electrocardiogram (EKG) will be collected for each patient, one from no more than 6 months before and one at least 90 days after concomitant therapy initiation. EKGs will be used to determine the corrected QT interval and the TDR before and after combination therapy. Hand measurement of the QT and Tpeak to Tend (Tp–Te) interval will be performed from usable V5 leads using the tangent methodology. When available, three continuous V5 leads will be measured using the digital calipers in Microsoft Adobe Acrobat® at 800% magnification. Rehospitalization 1 year after the start of the combination will be assessed. A paired students t-test comparing all endpoints before and after combination therapy will be performed with a p-value less than 0.05 considered significant.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-077

Poster Title: Assessment of unrestricted carbapenem use at an academic medical center

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Purpose: Antimicrobial stewardship programs (ASPs) promote the judicious use of antimicrobials in order to improve patient outcomes, minimize patient toxicities, eliminate unnecessary costs and minimize the emergence of antimicrobial resistance. A part of the ASP strategy is to restrict broad-spectrum antibiotics to Infectious Diseases (ID) specialists via pre-authorization. Currently, the use of carbapenems at the Riverside University Health System (RUHS) is not restricted to the ID service due to resource limitations. The purpose of this study is to evaluate the unrestricted use of the carbapenem antibiotic class at RUHS and assess the appropriateness of indication and duration of therapy.

Methods: Appropriate indications and durations of therapy for doripenem, ertapenem, imipenem and meropenem were collaboratively defined by the ID physician and ID pharmacist. Structured query of electronic medical records will identify patients who were at least 18 years of age and received a carbapenem during a six-month study period. Chart reviews of these patients will be conducted to determine the appropriate indication and duration of carbapenem use, and assess physician prescribing patterns of these unrestricted, broad-spectrum antibiotics. Data collection includes patient demographics, patient clinical status, physician status, unit of service, microbiology sensitivities, medication therapies, adverse drug effects and clinical outcomes. Proportional statistics will describe the results of the chart review. Recommendations and educational initiatives will be developed from these findings to advance ASP initiatives.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-078

Poster Title: Evaluating the impact of pharmacists on inpatient patient aligned care teams (iPACT) at the San Francisco Veteran Affairs Health Care System (SFVAHCS)

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Purpose: The purpose of this quality improvement (QI) project is to evaluate the impact of Inpatient Patient Aligned Care Team (iPACT) structure on methods of communication and discharge flow as related to medication ordering and pharmacy processing. This project will also aim to describe the number and type of interventions documented by team-based clinical pharmacists, to measure the estimated cost-avoidance per pharmacist intervention, and to illustrate team members' perceptions of communication, team structure, and pharmacy services.

Methods: The quality improvement project will describe three measures of pharmacy services including communication, interventions, and discharge flow on both traditional and patient aligned medicine teams. Methods of communication will be illustrated by documenting incoming and outgoing phone calls, pages, and private messages experienced by clinical pharmacists in both team structures. The project will also describe the number and types of interventions recommended by clinical pharmacists and will be determined through retrospective chart reviews and by tally sheets provided to the clinical pharmacists to record informal recommendations. These recommendations will then be used to determine the estimated cost avoidance for clinical pharmacist interventions. In order to describe the clinical pharmacists' role in discharge process and flow, the number of medication related addenda to discharge instructions, the number of discharge prescriptions processed by pharmacy, and the mean turn-around time for prescription processing will be measured. The project will also measure the time difference between various steps of discharge processes related to mediation ordering and processing. Lastly, team-members will be asked to complete a questionnaire regarding their experiences to document perception of communication, team structure, and pharmacy services.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-079

Poster Title: Impact of pharmacist safety review of patients with migraine diagnosis on chronic opioid therapy

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Purpose: Migraines diagnoses are common in primary care clinics and there are many non-pharmacological and pharmacological treatment options. Using opioids for treatment of migraines is controversial and can lead to medication overuse headache and overdose. Pharmacists can play an important role in migraine management by assessing the appropriateness of opioid use. Recommendations from pharmacists can lead to utilization of evidence-based, non-pharmacological and non-opioid alternatives to reduce opioid use. The objective of this project is to evaluate the impact of pharmacist recommendations for patients on opioid therapy with a migraine diagnosis based on recommendation implementation and improvement in safe opioid prescribing.

Methods: The electronic medical records will identify Veterans who are prescribed chronic opioid therapy, defined as a 90 day supply dispensed in the last 120 days, with a migraine diagnosis. A standardized note template will be developed to evaluate chronic opioid therapy in relation to migraine diagnosis. The following patient-specific data will be evaluated to assess for migraine therapy: current opioid regimen, morphine equivalent daily dose, date of last neurology visit, migraine-related VA emergency department within 12 months, and trials of non-opioid medications for migraine. The following patient-specific data will be evaluated to assess opioid safety: signed consent for long term opioids, pain clinical assessment within 6 months, state prescription drug monitoring query within 3 months, completed opioid overdose education and naloxone distribution training, date of last urine drug screen, and date of last electrocardiogram if on methadone. Recommendations will be made to primary care providers through the electronic medical record two to four weeks prior to each patient's primary care visit. In addition, patients will be mailed two migraine education pamphlets from the American

Board of Internal Medicine's Choosing Wisely campaign. Evaluation of providers' implementation of pharmacist recommendations will be conducted through chart review at one month from the first primary care visit subsequent to initial pharmacist review. This project is IRB-exempt as it is a quality improvement initiative.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 1-080

Poster Title: Treatment Effects on Serum Cholesterol in Veterans with Hepatitis C Successfully Treated With Direct-Acting Antiviral Agents

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Purpose: Hepatitis C virus (HCV) is a blood borne pathogen that chronically infects an estimated 7.3% of the veteran population. Current guidelines recommend the use of direct-acting antiviral agents (DAAs) with or without ribavirin depending on the virus genotype, the presence of cirrhosis, and treatment history of the individual. Previous studies revealed that HCV infection stimulates the expression of low-density-lipoprotein (LDL) receptors, resulting in lower serum cholesterol levels during chronic infection. This project is intended to describe the changes seen in a small population of veterans who were successfully treated for HCV with DAAs.

Methods: In this retrospective chart review, eligible veterans were diagnosed with HCV and successfully treated with DAAs at the VA Central California Health Care System. The following data was collected: age, gender, HCV genotype, specific DAA regimen, and baseline and post treatment TC and LDL levels. Baseline and post treatment lipid panels were then compared. Results were stratified based on genotype and DAA regimen. No statistical analysis was performed, but rather descriptive statistics were employed in order to describe the effects on TC and LDL of successful treatment with HCV.

Results: Baseline and post treatment TC and LDL were compared for 47 veterans. After successful treatment, there was an overall average increase in TC and LDL of 20.8mg/dL and 20.9mg/dL, respectively. Genotype 1A virus was the most prevalent infection treated. This group showed an average increase in TC and LDL of 22.7mg/dL and 23.0mg/dL, respectively. All other genotypes combined showed an average increase of 18.9mg/dL and 17.8mg/dL in TC and LDL, respectively. Lastly, a large proportion of veterans were successfully treated with ledipasvir/sofosbuvir. This group showed an average increase in TC and LDL of 18.7mg/dL and 20.7mg/dL, respectively. Treatment with all other DAA regimens showed an average increase in TC and LDL of 25.7mg/dL and 21.3mg/dL, respectively.

Conclusion: Among veterans, a rise in TC and LDL after successful treatment was found regardless of the HCV genotype or DAA regimen. Monitoring of lipid levels after successful treatment of HCV is not a common practice. Our findings suggest patients who are successfully treated for HCV should be monitored for lipid changes, which could warrant lipid lowering therapy initiation.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Descriptive Report

Session-Board Number: 1-081

Poster Title: Follow up on a conversion to Anti-Xa from aPTT for unfractionated heparin monitoring

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Purpose: Unfractionated heparin (UFH) indications include the prevention and treatment of venous thrombosis, pulmonary embolism, and the prevention of thrombosis following myocardial infraction and unstable angina. Heparin monitoring at our facility historically used aPTT, but in 2014 Veterans Affairs Central California Healthcare System (VACCHCS) shifted to using anti-factor Xa monitoring. The objective of this project is to ensure continued safe and effective UFH monitoring. This objective will be determined by incidence of bleeding episodes and venous thromboembolism (VTE) recurrence within 30 days of UFH use.

Methods: This is a retrospective chart review involving VACCHCS patients who were monitored using anti-Xa from January 1st, 2016 to September 29th, 2016. Inclusion criteria for the study includes patients on UFH therapy for greater than or equal to 12 hours for deep vein thrombus (DVT)/pulmonary embolism (PE) indications and age greater than or equal to 18 years. Exclusion criteria are as follows: patients with baseline elevated INR (greater than or equal to 1.5), hyperbilirubinemia (greater than 6.6 mg/dL), hypertriglyceridemia (greater than 360mg/dL), active malignancy, and heparin held for any length of time (excluding supratherapeutic value).
This chart review examined age, gender, hospital stay duration (days), UFH indication, UFH duration (days), major bleeding episodes, overt bleeding episodes, VTE recurrence in 30 days, and cardiovascular and all-cause mortality. Major bleeding episodes are any fatal bleeding or bleeding into a critical organ (e.g. retroperitoneal, intracranial, intraocular, or intraspinal). Overt bleeding is greater than or equal 2 g/dL drop in hemoglobin level or requiring 2 units of blood transfusion.

Results: Out of the 176 patients examined, twelve patient met inclusion criteria. There were eleven males and one female with average age of 73.6 years. Nine patients had a diagnosis of PE, while the others had a diagnosis of DVT. The average UFH duration was 3 days, and hospital duration was 8 days. There was no VTE reoccurrence in 30 days, major bleeding episodes, and overt bleeding episodes after initial use of UFH. No mortality was observed during the examination period.

Conclusion: Overall, the shift in UFH monitoring from aPTT to anti-Xa labs has not shown an associated increase in bleed risk or VTE recurrence in our patient population. A major limitation to this observational study is the small population size, as a majority of patients on UFH during the evaluation period were excluded based on indication or duration of use.

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 1-082

Poster Title: The Impact of a Prescription Drug Monitoring Program (PDMP) at Veteran Affairs Greater Los Angeles Healthcare System (VAGLAHS)

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Purpose: Controlled Substance Utilization Review and Evaluation System (CURES) is a prescription drug monitoring program (PDMP) that provides a resource at the Veteran Affairs Greater Los Angeles Healthcare System (VAGLAHS) to detect overlapping prescriptions. Urine drug screenings (UDS) may detect controlled and/or illegal medications. Patient informed consents are agreements for patients not to fill controlled medications at non-VA pharmacies. At VAGLAHS, the opioid safety initiative (OSI) requires documentation of CURES reports, UDS, and patient informed consents. The purpose of this project was to evaluate prescribing decisions of controlled medications at VAGLAHS based on CURES reports data, UDS, and patient informed consents.

Methods: This retrospective evaluation looked at outpatients with a documented CURES report at VAGLAHS within the enrollment period of January 1, 2014 to March 31, 2015. Patients who filled non-VA controlled medications within 12 months prior to their first CURES report in the enrollment period (considered “positive CURES”) were included for evaluation.
The "Initial Visit" was the visit associated with the first CURES report, where we observed if overlapping prescriptions were found and UDS were available. If the physicians prescribed the medication, we also checked to see if a patient informed consent was documented.
"Checkpoint #1" was the first follow-up visit within 6 months since the Initial Visit. The presence of a repeat CURES report and/or urine toxicology test was recorded. The continuation of the controlled medication based on these results was observed. "Checkpoint #2" was the second follow-up visit within 6 months from the Initial Visit. A repeat CURES report, UDS, and continuation of the controlled medication based on the results were observed. Finally, a

subgroup evaluation was completed for patients who specifically had overlapping prescriptions in the initial CURES report note. This subgroup was followed through at the Initial Visit, Checkpoint #1, and Checkpoint #2 and the findings were compared with the overall population results.

Results: 752 patients had a documented CURES report note. 328 (44%) patients had a "positive" CURES report showing non-VA medications were filled within the previous 12 months. In these 328 patients, 193 (59%) had overlapping prescriptions. 137 (42%) patients had medications continued with 80 (58%) having agreements not to fill the medications at non-VA pharmacies. At Checkpoint #1, 117 patients followed up and repeat CURES were documented in 24 (21%) patients with 8 (33%) showing a positive CURES report. At Checkpoint #2, 80 patients followed up and repeat CURES reports were documented in 13 (16%) patients with 4 (31%) showing a positive CURES report.
The subgroup evaluation included the 193 patients that were found to have overlapping prescriptions in their initial CURES report. 47 (24%) of these patients had their medications continued with 34 (72%) agreements not to fill at non-VA pharmacies documented. At Checkpoint #1, 10 (23%) patients had a repeat CURES report with 4 (40%) showing a positive CURES report. At Checkpoint #2, 3 (10%) had a repeat CURES report with 2 (67%) showing a positive CURES report. Other findings included that less than 30% of patients had available UDS at all encounters for the general and subgroup populations.

Conclusion: CURES reports aid in finding patients that obtain overlapping prescriptions. Many patients had overlapping prescriptions in VA and non-VA sources in the enrollment period. Patients with overlapping prescriptions were more likely to have their medications discontinued at the Initial Visit. Patient agreements to not fill at non-VA pharmacies were more likely completed for patients with overlapping prescriptions. Repeat CURES and UDS were not regularly completed at follow-up appointments. Limitations of this evaluation include not being able to enroll patients that did not have a properly documented CURES report and prescribers that didn't analyze if patients had overlapping prescriptions between different VAs. Future considerations include improving prescribing practice by increasing the use of CURES reports and UDS information. It may also be useful to run this evaluation in a more recent time period to see if the implication of the Opioid Safety Initiative (OSI) at VAGLAHS has improved.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Case Report

Session-Board Number: 1-083

Poster Title: Antipsychotic-induced gynecomastia without prolactin elevation

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Purpose: Typical antipsychotic agents and risperidone are known to increase the risk of developing gynecomastia, galactorrhea and/or amenorrhea by increasing prolactin levels. Gynecomastia with normal prolactin levels as a result of antipsychotic medication use has not been reported. This case series illustrates two possible cases of antipsychotic-induced gynecomastia in the absence of hyperprolactinemia. Mr. O is a 36-year-old male with a psychiatric history of recurrent major depressive disorder, amphetamine-induced psychotic disorder, and substance use disorder. He presented with gynecomastia on both sides of his chest starting 5-6 months ago when haloperidol was initiated to target auditory hallucinations. He denied galactorrhea but reported chest sensitivity to pressure. Haloperidol was effective in reducing the frequency of auditory hallucinations from daily to weekly. A prolactin level was then ordered and found to be within normal limits (13.6ng/mL). Of note, three months prior to the onset of gynecomastia he also resumed taking efavirenz/emtricitabine/tenofovir for Human Immunodeficiency Virus treatment. He was previously on other regimens containing efavirenz but were unsuccessful for years due to concomitant methamphetamine use. Although efavirenz has been associated with gynecomastia with a delayed onset of up to 5 to 15 months, Mr. O did not report gynecomastia or related symptoms with previous efavirenz trials in the years prior to this onset. He was subsequently switched to aripiprazole, an antipsychotic agent with less incidence of gynecomastia. The second case involves Mr. J who is a 40-year-old male with a psychiatric history including schizophrenia and substance abuse. His psychotic symptoms had been stable on risperidone long-acting injection for many years. His concomitant medication included hydrocodone/acetaminophen, which he was taking on a daily basis. He reported unilateral gynecomastia over the past few months and requested to be off risperidone. Prolactin level was checked, which came back normal (6.0 ng/mL). During this period of time, his weight remained relatively stable and even decreased around the time he initially noticed gynecomastia. A mammogram showed moderate to severe right gynecomastia with no

evidence of malignancy. Per his request, his dose of long-acting risperidone injection was decreased from 37.5mg to 25mg which resulted in no change of gynecomastia. Mr. J was then switched to paliperidone long-acting injection as he had a previous side effect from aripiprazole, which has the minimum effects on prolactin, and he needed to stay on a long-acting injectable formulation for a better medication adherence. He continued to report chest sensitivity and discomfort on paliperidone. After two months of paliperidone treatment, he experienced worsening of auditory hallucinations and was admitted for inpatient treatment. Upon discharge he was restarted on risperidone, as he was willing to tolerate gynecomastia from risperidone due to the benefit of better psychosis control.

Both cases represent gynecomastia with normal prolactin levels, which is not the proposed mechanism for antipsychotic induced gynecomastia. Concurrent medications in these cases are also the possible cause of gynecomastia but excluded as the cause. The history of substance abuse in both cases is of interest and may possibly contribute to the results. Further research is needed to support this clinical suspicion of a correlation between antipsychotics and gynecomastia without hyperprolactinemia.

Methods:

Results:

Conclusion:

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-084

Poster Title: Rates and reasons for discontinuation of prazosin among veterans with posttraumatic stress disorder at the Veterans Affairs Loma Linda Health Care System

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Purpose: Prazosin is frequently utilized to target nightmares and other sleep disturbances associated with posttraumatic stress disorder (PTSD). However, analysis of national prescription data has shown that prazosin treatment persistence beyond one year is very low, and many patients never reach the minimum target daily dose recommended by guidelines. A medication use evaluation will be conducted to characterize the rates and reasons for discontinuation of prazosin among veterans with PTSD at the facility in order to help determine whether or not a pharmacist-run prazosin titration clinic would be a valuable service to formally establish.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be performed to evaluate veterans diagnosed with PTSD who were initiated on prazosin at the facility between January 1, 2014 and December 31, 2014. The one-year time period following prazosin initiation will be assessed. Data collected will include reasons for discontinuation, timing of last fill before discontinuation, maximum daily dose achieved during treatment course, and medication possession ratio as a marker of adherence. Descriptive statistics will be used to analyze the collected data.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-085

Poster Title: Analysis of the efficacy and safety of direct oral anticoagulants in patients of extremes of weight

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Purpose: The 2016 American College of Chest Physicians guidelines recommend the use of rivaroxaban, apixaban, and dabigatran over warfarin in patients with venous thromboembolism without cancer induced hypercoagulability. There is a lack of information in the safety and efficacy of the direct acting oral anticoagulants in certain patient populations including underweight and high body weight patients. Adjustment for weight is not currently recommend for oral anticoagulants. The objective of this study is to assess if body mass index is associated with differences in efficacy and safety of standard doses of direct acting oral anticoagulants.

Methods: This review will be submitted to the Northern California Veterans Affairs Research Services for approval as a Quality Improvement Project. Veterans treated with direct acting oral anticoagulants (apixaban, rivaroxaban, or dabigatran) within Veterans Affairs Northern California Health Care System between October 1, 2010 to September 1, 2016 will be identified using the electronic medical record. The following demographic data will be collected: age, weight, gender, renal function, direct acting oral anticoagulant prescribed and presence of malignancy. Veterans will be categorized by their body mass index category (BMI) as: underweight (BMI less than 18.5 percent), normal or overweight (BMI 18.5 to 29.9 percent), obese (BMI 30 to 39.9 percent), or morbidly obese (BMI over 40 percent). Veterans will then be evaluated for the incidence of primary and secondary safety and efficacy outcomes. Clinical outcomes of arterial thromboembolism (stroke, transient ischemic attack, systemic embolism) and major bleeding events will be assessed. Chart review will be used to determine the timeline of anticoagulant prescribing and thromboembolic or bleeding event. The co-primary outcomes

of arterial thromboembolism (including stroke, transient ischemic attack, systemic embolism) or major bleeding will be compared for different BMI groups and prescribed anticoagulant. Secondary outcomes include acute myocardial infarction, deep venous thromboembolism, pulmonary embolism, death or clinically relevant non-major bleeding.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-086

Poster Title: Population health approach to improve hepatitis C virus screening rates among veterans

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Purpose: The Center for Disease Control and the United States Preventative Service Task Force recommend performing a one-time antibody test screening for hepatitis C virus (HCV) among all adults who were born between 1945-1965. Veterans in this birth cohort are six times more likely to have a positive antibody screen compared with those born in other years. The overall aim of the study is to describe how pharmacy-performed interventions affected HCV screening and treatment among veterans in this birth cohort within VA Northern California Health Care System (VANCHCS).

Methods: This retrospective review looked at VANCHCS patients born between 1945-1965 who did not have an HCV antibody screen performed as of July 1, 2016. Veterans with no assigned primary care provider and patients with no mailing addresses were excluded. Patients in the cohort were identified using a Veterans Integrated Service Network (VISN 21) Dashboard report. In this cohort, an automated program to order laboratory screening tests for HCV infection was created. All patients received a letter with the following components: (1) tailored information indicating patient meets birth cohort recommendation for HCV screening, (2) details about HCV risks and its health implications, (3) a dedicated pharmacist telephone number to ask questions or opt out. Our outcome of interest is to determine the effectiveness of the interventions in increasing HCV screening among veterans in the birth cohort. Increases in the number of screenings performed will be measured as a percent change from baseline. A secondary outcome is the seropositivity among the VANCHCS cohort who had testing performed due to the interventions, and its comparison to a nationally reported score. Another outcome is treatment initiation rate among those who tested positive for HCV infection.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-087

Poster Title: Impact of non-adherence to guideline-directed medical therapy and the risk for arrhythmic events in Veterans with heart failure and implantable cardioverter-defibrillators

Primary Author: Jenny Le, VA San Diego Healthcare System, CA; **Email:** jennyle909@gmail.com

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Purpose: Treatment with guideline-directed medical therapy (GDMT) in heart failure with reduced ejection fraction (HFrEF) is recommended before and after primary prevention implantable cardioverter-defibrillator (ICD) placement. The impact of adherence to GDMT regimens on arrhythmic event rates post ICD implantation is unknown. The objective of this study is to determine the impact of non-adherence to GDMT on arrhythmic event rates post ICD implantation. We hypothesize that non-adherence to GDMT will be associated with a higher incidence of arrhythmic events.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a retrospective observational cohort study that includes Veterans with HFrEF and ICD placement. Data will be collected by chart review including prescription refill records and ICD device interrogation reports. Adherence to GDMT and arrhythmic events will be assessed in the first 12 months following ICD placement. Appropriate GDMT regimens will include the use of renin-angiotensin aldosterone inhibitors and beta-blockers. Adherence will be determined by evaluating the overall prescription rates for GDMT recommended therapy in eligible patients and evaluating patient adherence to GDMT regimens. Patient adherence to GDMT regimens will be determined using the proportion of days covered (PDC) method. Adherence to GDMT will be defined as having a PDC greater than or equal to 80 percent. Arrhythmic events will include the detection of ventricular tachycardia or ventricular fibrillation (VT/VF) during ICD interrogation. Additional demographic data including New York Heart Association (NYHA) functional class, baseline QRS interval, left bundle branch block, history of VT/VF, will be collected to evaluate risk factors associated with non-adherence to GDMT or increased arrhythmic events. Statistical analysis will include chi-square tests to compare the proportion of patients with an arrhythmic event among patients adherent and non-adherent to GDMT.

Multivariate regression analysis will be performed to determine risk factors associated with arrhythmic events or non-adherence to GDMT.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 1-088

Poster Title: Utilization Evaluation of Injectable Acetaminophen

Primary Author: Karen Cham, VA San Diego Healthcare System, CA; **Email:** cham.karen@gmail.com

Additional Author (s):

Purpose: Injectable acetaminophen (APAP) is approved for mild to moderate pain, moderate to severe pain with adjunctive opioid analgesics, and fever reduction. VA National Criteria for Use (CFU) limits the use of the IV APAP to patients with acute postoperative pain, are unable to take analgesics orally, or are unlikely to have sufficient gastrointestinal absorption from oral APAP. Injectable APAP has been evaluated for up to 48 hours for postoperative pain; thus orders are limited to 48 hours. Due to a recent increase in cost, this evaluation is aimed to determine whether injectable APAP is utilized appropriately in the inpatient setting.

Methods: Data was pulled from Vista for all patients who received injectable APAP from August 1, 2016 thru August 26, 2016. Barcode administration data was also collected to identify the start and stop time of injectable APAP administrations and the number of doses a patient received. To evaluate the appropriateness of injectable APAP use, a chart review was conducted on all patients who received one or more doses of injectable APAP. We evaluated the reason for injectable APAP, the patient's dietary status at the time the medication was started, and other oral medications the patient was taking concurrently with injectable APAP.

Results: Of the 79 patients that received injectable APAP over the month of August, the most common indication (94%) was management of postoperative pain. Injectable APAP orders were active on average for 1 day (range: 1 to 3 days) and the average number of doses a patient received was 4.8 (range: 1 to 14 doses). A total of 21 patients received a one-time dose of injectable APAP post procedure, while 58 patients received scheduled injectable APAP. A greater proportion of patients who received 1 or 2 doses of injectable APAP (95%) discontinued it once other oral medications were resumed compared to those patients who received 3 or more doses (15%). Throughout the period where injectable APAP was utilized, 46 patients (58%) were tolerating solid foods (regular, carb, and soft food diet). Among patients who were NPO for more than 48 hours, 3 patients had injectable APAP discontinued once they started on

oral medications. Of the 75 patients of patients who were NPO for less than 48 hours, 28 patients (37%) discontinued injectable APAP once oral medications were restarted while 47 patients (63%) received additional injectable APAP after restarting oral medications.

Conclusion: Results of this study show that the most common reason patients received injectable APAP was for postoperative pain management. Based on the National CFU, injectable APAP is indicated for postoperative pain management; however it would not be indicated for patients who tolerate oral analgesics. Over half of the patients reviewed received injectable APAP concurrently with other oral medications. This suggests that a large proportion of patients should be able to tolerate oral APAP. Furthermore, concurrent administration of injectable APAP with other oral medications occurred more frequently among those who had scheduled injectable APAP compared to those who received one to two doses following surgery. Based on these findings, it would be appropriate to limit orders of injectable APAP to a 1 time dose and/or limit the active orders to 24 hours. Limiting the duration of the active order will allow patients to be reevaluated if subsequent doses are requested.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-089

Poster Title: Evaluation on the management of upper respiratory infections (URIs) in VA San Diego outpatient setting: a retrospective study

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Purpose: Based on recent studies, antibiotics are often inappropriately utilized and overprescribed in the outpatient treatment of URIs, thus potentially leading to increased risk of resistance, adverse effects, and other complications. As a result, the CDC guidelines provide recommendations on the diagnosis, treatment, and overall outpatient management of URIs. The purpose of this research is to identify potential areas of intervention by assessing providers' compliance of the CDC guidelines and the potential complications arising from inappropriate management of ARIs in the VA San Diego (VASD) primary care setting.

Methods: This study will be submitted to the Institutional Review Board for approval. This investigation will be performed as a localized single-center study modeled under the national medication use evaluation (MUE) of antibiotic utilization for URI treatment in participating Veterans Affairs facilities. A retrospective chart review will be performed using the Veteran Affairs electronic medical record (EMR) to categorize patients to the following URI diagnosis per the CDC guidelines: acute pharyngitis, acute bacterial rhinosinusitis, acute bronchitis, non-specified URI. The following data will be collected: signs/symptoms, diagnostic criteria used, primary URI diagnosis, antibiotics prescribed, duration of therapy, antibiotics' documented adverse effects, outpatient return visits with acute respiratory infection (ARI) as primary diagnosis, ARI-related hospital admission post-encounter, patient's comorbidities, clinical outcomes, and mortality (if applicable). Collected data will be analyzed using descriptive statistics. Each prescribed antibiotic with a documented URI will be evaluated for appropriateness based on the CDC guidelines.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-090

Poster Title: Comparison of serotonergic antidepressants to bupropion mono- or combination therapy in comorbid PTSD and methamphetamine use disorder

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Purpose: Serotonergic antidepressants are a staple treatment of post-traumatic stress disorder (PTSD). Selective serotonin reuptake inhibitors are first-line treatment options, while bupropion is often reserved as a last-line agent due to the concern that its noradrenergic properties may worsen anxiety symptoms. Up to fifty percent of individuals with PTSD have reported ever using methamphetamine. Bupropion has been found effective in the treatment of mild methamphetamine use disorder. It is hypothesized that patients with comorbid PTSD and methamphetamine use disorder will respond better to medication regimens containing bupropion due to its noradrenergic and dopaminergic properties mimicking the neurochemicals associated with methamphetamine use.

Methods: This is an IRB approved study. Data will be collected via retrospective chart review from patients admitted to the VA San Diego ASPIRE Center from February 2014 through September 2016. The data to be collected include: patient age, gender, ethnicity, psychiatric diagnoses, engagement in trauma-focused therapy, psychotropic medication trials, PTSD Checklist (PCL) scores, time to relapse, and number of relapses. SQL software will be used to extract data from the chart regarding patient demographics. Chart review will be utilized for all remaining data points. All data will be collected without patient identifiers and stored securely in a password protected computer. The primary outcome to be assessed is difference in PCL scores between patients on serotonergic agents versus those on bupropion. Secondary outcomes to be assessed include rates of relapse and average time to relapse.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-091

Poster Title: Impact of a pharmacist-run pain clinic on opioid use in Veterans with chronic nonmalignant pain

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Purpose: Opioid medications are associated with dependence, tolerance, abuse, and the risk of accidental overdose. There has been a nationwide initiative by the Department of Veterans Affairs (VA) to reduce the use of opioid medications among Veterans. At the VA San Diego Healthcare System, patients may be referred to a pharmacist-run pain clinic where pharmacist duties include patient education, consultation with physicians for opioid weaning, and prescribing of non-opioid pain medications. The objective of this study is to analyze the impact of a pharmacist-run pain clinic on opioid use and utilization of healthcare resources by Veterans with chronic nonmalignant pain.

Methods: This retrospective chart review has been approved by our local Institutional Review Board. The electronic medical record system will identify adult patients with chronic nonmalignant pain who have been referred to the pharmacist-run pain clinic and who were on at least one opioid medication. The first visit to the pharmacist-run pain clinic will be designated as the index visit, and patients will be followed for one year. The following data will be collected from the index visit: age, gender, pain diagnosis, and mental health diagnosis. Daily morphine equivalent dose, adjuvant pain medications, adherence to universal precautions, abnormal urine drug screens, and consults placed for nonpharmacological pain management will be recorded at time of index visit, 6 months, and 12 months. Pain related emergency department visits, walk-in primary care visits, and hospitalizations in the 12 months before and after the index visit will be recorded. The number of pharmacist-run pain clinic visits and total contact time with a pain pharmacist will be documented. All data will be recorded without patient identifiers and maintained confidentially. Data will be analyzed to determine change in daily morphine equivalent dose over the study period, and patient characteristics associated

with successful opioid weaning will be identified. Pre- versus post-index 12 month data will be analyzed to determine differences in healthcare utilization.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-092

Poster Title: Improving medication safety performance measures for lithium, valproic acid and carbamazepine at the San Francisco VA Health Care System

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Purpose: Every year, performance measure goals are set for the San Francisco VA Health Care System (SFVAHCS) to improve medication safety for veterans on high-risk medications. Three particular drugs of interest are lithium, valproic acid and carbamazepine as these drugs require timely drug monitoring in order to prevent adverse effects. The measures for these drugs aim to decrease the number of patients missing appropriate follow-up labs. The purpose of this quality improvement study is to identify barriers to and opportunities for obtaining follow-up labs for lithium, valproic acid and carbamazepine, and implement methods to meet and maintain medication safety goals.

Methods: This quality improvement study was submitted to the SFVAHCS Office of Research and Development for approval. The current performance measure goals for veterans on lithium are biannual lithium and annual serum creatinine levels; annual liver function test (LFT) and complete blood count (CBC) for veterans on valproic acid; and lastly, annual LFT, CBC and sodium levels for veterans on carbamazepine. A clinical dashboard will identify SFVAHCS veterans on lithium, valproic acid and carbamazepine who have not met the performance measures and therefore are not at goal. The computerized patient record system (CPRS) will be utilized to collect the following data: patient age, sex, medication of interest, duration on target medication, prescribing provider and service, time and value of the last two corresponding performance measure labs, any missed opportunities including clinical appointments or lab draws, and reasons for missing labs. After the reasons and barriers to missing labs are identified, the appropriate system protocol will be implemented in CPRS to improve timely drug monitoring and to meet and maintain performance measure goals long-term. Snapshots of performance measure scores will be collected throughout this study, including prior to system protocol implementation and three months after. A post-analysis of veterans missing follow-up

labs at three months after system protocol implementation will be conducted to analyze the efficacy of the system protocol.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-093

Poster Title: Evaluating the impact of a proton pump inhibitor de-escalation program in low-risk extended trial patients at the San Francisco Veterans Affairs Health Care System (SFVAHCS)

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Purpose: San Francisco Veterans Affairs Health Care System (SFVAHCS) utilizes a clinical dashboard to enhance medication safety monitoring for Veterans prescribed high risk medications. One feature of the dashboard allows users to view data for low-risk patients prescribed chronic proton pump inhibitor (PPI) therapy, defined as Veterans who have been on therapy for greater than one year. The purpose of this quality improvement project is to implement and evaluate a clinical pharmacist-driven PPI de-escalation program to decrease the percentage of low-risk extended PPI trial patients identified as actionable patients on the medication safety dashboard.

Methods: This quality improvement project was submitted to the Veterans Health Administration Office of Research and Development for approval. The medication safety dashboard low-risk extended PPI trial measure will be used to identify patients in whom to de-escalate therapy. The primary endpoint includes the percentage of low-risk extended PPI trial patients who are initiated on de-escalation therapy. Secondary endpoints consist of determination of the program's direct total annualized drug cost savings and comparison of the low-risk extended chronic PPI performance measure scores before and after program implementation. The following data will be collected from the computerized patient record system: patient age, gender, height, weight, serum creatinine, creatinine clearance, hemoglobin, hematocrit, current medications, date of PPI initiation, indication for therapy, current dose, patient adherence, history of previous trial on histamine-2 antagonist therapy or step-down PPI therapy, and risk factors for gastrointestinal symptoms. Implementation of the de-escalation program will include an initial assessment note with recommendations for therapy de-escalation based upon a treatment algorithm recommended by the Veterans

Integrated Service Network and clinical judgment. Evaluation of the program will include chart review one month after the next clinic appointment to determine if recommendations for de-escalation were accepted and implemented. The percentage of recommendations accepted by providers will be determined. The performance measure score for low-risk extended trial therapy will be collected for SFVAHCS before and after program implementation.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-094

Poster Title: Outcomes of pharmacists in diabetes care at a veterans affairs healthcare system

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Purpose: The Department of Veterans Affairs serves 5.3 million patients annually. Close to one in five patients in the VA have diabetes. In many of the VA's interdisciplinary team models, pharmacists are involved with managing diabetes as mid-level providers under a scope of practice agreement. Their scope of practice includes responsibilities such as developing and managing medication regimens, monitoring and evaluating pharmacotherapeutic effects, ordering and evaluating laboratory tests, requesting referrals to specialists, and providing disease education. The purpose of this study was to evaluate the clinical and economic impact of pharmacists in managing diabetes when incorporated into an interdisciplinary team.

Methods: This was a retrospective study, which included veterans who were enrolled in a pharmacist-run clinic at the VA Greater Los Angeles Healthcare System between November 1, 2012, and November 1, 2014. Diabetic patients with an A1c greater than 6.5 percent or on one or more antidiabetic medication(s) at the time were included in the study. Patients were excluded if they had only one visit with a clinical pharmacist, no documented baseline A1c, or no documented A1c at discharge from the clinic. Data between November 1, 2011 and November 1, 2015 was gathered and evaluated. Our primary outcome measured the change in A1c from initial to last pharmacist visit. Secondary outcomes measured the percent of patients who reach their A1c goal, percent of patients maintaining their A1c goal, and differences in clinical outcomes in diabetes-related hospitalizations, Emergency Department (ED) visits, and hypoglycemic episodes. The cost benefit of incorporating pharmacists on interdisciplinary teams was also evaluated.

Results: Of the 576 patients evaluated, a total of 303 patients with diabetes mellitus type I and II met the inclusion criteria. The average reduction in A1c was 1.83 percent ($P < 0.0001$). The average number of days between the initial and last visit was 11.9 months with an average of 10.23 visits with a pharmacist. Forty nine percent of patients were able to reach their individualized A1c goal before discharge. Of the patients that were able to reach their A1c goal (n=284), 68 percent of patients maintained their A1c for at least a year. There was an overall reduction in ED visits ($P=0.038$), while the overall reduction in hospitalizations was not statistically significant ($P=0.09$). Sub-analysis of four patients referred to a clinical pharmacist solely for hypoglycemia management had hypoglycemic symptoms eliminated in 1 to 2 visits. A net savings of 61,440 – 96,392 dollars, or 904 - 1,418 dollars per patient, was estimated for patients with a greater than or equal to 1 percent drop in A1c at 1 year.

Conclusion: Pharmacists involved with diabetes management trends towards providing a cost effective service that contributes to reductions in A1c, ED visits, and hypoglycemic frequency.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-095

Poster Title: Healthcare utilization in patients labeled with a beta-lactam allergy compared to unlabeled patients

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Purpose: Beta-lactam antibiotics are recommended as first-line therapy in many infections due to their high efficacy. Unfortunately, self-reported allergies to beta-lactam antibiotics, particularly penicillin, are common in the United States. Once patients are labeled with a beta-lactam allergy, they are more likely to receive alternative antibiotics, many of which are associated with inferior clinical outcomes, poorer safety profiles, and a higher risk of inducing drug resistance compared to beta-lactam antibiotics. The purpose of this study is to evaluate healthcare utilization and infection-related outcomes in patients labeled with a beta-lactam allergy compared to unlabeled patients.

Methods: This is an IRB-approved retrospective cohort study to be conducted using Veterans Health Administration (VHA) electronic health data. All patients who received at least one antibiotic during a predefined time frame will be included. A cohort of patients with a beta-lactam allergy label (defined as a documented allergy to a penicillin, penicillin-derivative, cephalosporin, or carbapenem antibiotic) will be compared to a matched cohort of patients without a beta-lactam allergy label.
The primary outcomes will be 1) infection-related readmission or ED visit within 30 days of receipt of an outpatient antibiotic and 2) receipt of an outpatient antibiotic within 30 days of discharge from an infection-related hospital admission where the patient received inpatient antibiotic treatment.
Secondary outcomes include the use of reserve antibiotics (fluoroquinolones, macrolides, vancomycin, aztreonam, aminoglycosides) in both the inpatient and outpatient settings, cost and duration of antibiotic therapy, the number of antibiotics received, overall and in-hospital

mortality, the incidence of Clostridium difficile infection, ICU admission, and, for those patients admitted for an infection, length of hospital stay and infection-related readmission.
Student t tests will be used to compare means and proportions. Chi square tests will be used to compare categorical variables. P values < 0.05 will be considered statistically significant.

Results: To be presented at the meeting.

Conclusion: To be presented at the meeting.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-096

Poster Title: Comparison of Testosterone Dosage Forms at Various Altitudes within the Veterans Affairs

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Purpose: Testosterone replacement therapy is recommended for men diagnosed with hypogonadism. However, testosterone replacement has been associated with erythrocytosis and polycythemia. Living at high altitude (>3,500 feet above sea level) has also been shown to increase hemoglobin and hematocrit. This study will compare patients on testosterone replacement therapy at high and low altitudes to assess effect on hematocrit. There is currently no available evidence comparing hematocrit levels in the various dosage forms of testosterone at different altitudes. This information will aid providers in selecting dosage forms and provide greater reasoning for prescription of testosterone therapy in areas of high altitude.

Methods: This will be a multicenter, retrospective cohort study of patients receiving testosterone therapy through two cohorts within the Veterans Affairs (VA). The two cohorts will be identified as eight VA stations at high altitude (> 3,500 feet above sea level) and eight VA stations at low altitude (< 50 feet above sea level). Subjects will be stratified into six groups: injectable testosterone in areas of high altitude, injectable testosterone in areas of low altitude, testosterone patch in areas of high altitude, testosterone patch in areas of low altitude, testosterone gel in areas of high altitude, and testosterone gel in areas of low altitude. Participants will be identified based on testosterone treatment date, testosterone prescription refill history, obtainment and dates of hematocrit levels, obtainment and date of testosterone level, and ICD-9 codes. The observation period will be between October 1st 2010 to September 30th 2015. Inclusion criteria will be male patients initiating testosterone replacement therapy within the two study cohorts, a hematocrit level six months prior to initiation, through

testosterone prescription, and 6-12 months after initial testosterone prescription date, and must also be treated with testosterone for two years during study duration. Exclusion criteria will be patients using testosterone for gender transition. Data measures will be stored and analyzed on the secure VA database, with study investigators as the only persons with access to the data.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-097

Poster Title: Impact of pharmacist interventions on the treatment of hepatitis C patients at a Veterans Affairs healthcare facility

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Purpose: The hepatitis C virus (HCV) is a contagious, generally chronic liver disease that affects approximately 3-4 million people in the United States. Medication therapies for HCV have evolved in both tolerability and efficacy, with some regimens showing upwards of a 99% sustained virologic response at 12 weeks (SVR12) for select genotypes. The purpose of this project is to evaluate the impact associated with pharmacist recommendations on therapy selection, drug-drug interactions, adherence history, and other interventions when treating this disease state within a single institution.

Methods: This project is a retrospective analysis of patient data obtained from this single facility's Computerized Patient Record System (CPRS) between 5/1/2014 and 9/30/2016 and has been approved by the institution's Research Office as quality improvement. Evaluation of all patients selected to begin HCV treatment within this timeframe at this facility will examine the following data: HCV genotype and subtype, HIV status, cirrhosis status, treatment history, regimens requested and initiated, pharmacist interventions and reasoning, any additional pharmacist interventions, and SVR12 status. Data will be analyzed to evaluate the impact of pharmacist recommendations and interventions. The amount and types of pharmacist interventions, in the form of therapy adjustments, drug-drug interactions, adherence analyses, and any additional suggestions, will be analyzed primarily in terms of percentage of patients affected to measure pharmacy impact on patient care. This overall impact will serve as the primary outcome of this project. Further, the SVR12 value associated with each patient will be utilized as a secondary endpoint to assess the treatment course as a whole. The results will be utilized to provide support for further pharmacist involvement in liver clinics within similar institutions.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-098

Poster Title: Evaluating glucagon-like peptide-1 agonist prescribng patterns and efficacy of achieving diabetes disease state goals within VA Connecticut Healthcare System

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Purpose: GLP-1 agonists have had an expanded role in diabetes management in recent years, after first line metformin, but are associated with increased direct costs compared to other diabetes alternatives. The objective of this medication use evaluation is to identify recent prescribing trends of GLP-1 agonists and to determine therapeutic effects on diabetes disease state goals, especially A1c and weight.

Methods: This medication use evaluation has been approved as a Quality Improvement project. A retrospective chart analysis of the electronic medical record will be conducted to identify patients receiving GLP-1 agonists for the management for type 2 diabetes mellitus. The following patient data will be collected: age, A1c trends, weight, BMI, prescribing service, initiation date, diabetes medication regimen at baseline, previous diabetes medication trials, current diabetes medication regimen, insulin dose if applicable, and discontinuation date of GLP-1 agonist if applicable. Provider documentation will be reviewed to determine the rationale for initial prescription of a GLP-1 agonist, and in those patients who had GLP-1 agonist therapy stopped, the reason for discontinuation. All data will be recorded in such a manner to maintain confidentiality. The collected data will be analyzed to determine GLP-1 agonist prescribing trends as well as GLP-1 agonist effect on A1c, weight, and BMI in the veteran population. Results will be compiled for healthcare provider education and to provide guidance on appropriate prescribing of GLP-1 agonists.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-099

Poster Title: Medication use evaluation of diclofenac gel at the Veterans Affairs Connecticut Healthcare System

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Catherine Kulis-Robitaille
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Purpose: The Veterans Affairs (VA) National Formulary recently added diclofenac gel to the formulary in May 2016. Since its addition, the number of patients prescribed diclofenac gel has increased drastically. However, patients and providers are often unaware of its approved indications for use and thus diclofenac gel may be overprescribed. This medication use evaluation (MUE) will assess whether diclofenac gel is being appropriately prescribed and if its use is in line with available evidence. This retrospective MUE will attempt to provide further education to practitioners to improve diclofenac gel therapy and reduce the costs associated by potentially decreasing inappropriate prescribing.

Methods: This medication use evaluation will be a retrospective chart analysis of 265 patients from the VA Connecticut Healthcare System. Patient data will be collected from May 1, 2016 to September 30, 2016. All patients prescribed diclofenac gel during that time will be included. The following information will be collected and analyzed for patients previously or currently treated with diclofenac gel: patient characteristics, age, location prescribed, indication for therapy, treatment site, total daily dose of diclofenac gel, duration of therapy, other analgesics prescribed (including oral NSAIDs, topical lidocaine cream), nonpharmacological therapies, and pain scores, if available. Data collected will be analyzed to improve the quality of care to Veterans and to provide education to healthcare professionals within the VA Connecticut Healthcare System.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-100

Poster Title: Evaluation of sodium-dependent glucose transporter (SGLT-2) inhibitor prescribing patterns in the Veterans Affairs setting

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Additional Author (s):
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Purpose: Sodium-dependent glucose transporter-2 (SGLT-2) inhibitors are a class of antihyperglycemic agents that target proximal tubules in the kidneys to inhibit reabsorption of glucose. Clinical studies have shown that SGLT-2 inhibitors decrease fasting plasma glucose and HbA1c levels (0.7%–0.8%) when compared to placebo or when used in combination with other antihyperglycemic agents. The purpose of this quality improvement project is to evaluate the current prescribing patterns and use of SGLT-2 inhibitors in the Veterans Affairs (VA) setting.

Methods: This study has been approved by our institution as a quality improvement initiative, exempt from approval by the institutional review board. To identify patients in this retrospective analysis, prescription records for SGLT-2 inhibitors from April 2016 to September 2016 will be extracted from the electronic medical record. Provider documentation, lab values, and medication administration records will be used to collect patient data. The following data will be collected via retrospective chart review: patient age, sex, weight, height, serum creatinine, pertinent past medical history, hemoglobin A1c (HbA1c), service of prescriber, active medications, and prescribed SGLT-2 therapy and dosage. All patient data will be de-identified and maintained confidentially. For the purpose of this study HbA1c at SGLT-2 initiation will be documented, along with the next recorded HbA1c greater than 30 days after SGLT-2 initiation. If available, provider documentation of any adverse effects after initiation of SGLT-2 inhibitor will be recorded. Data collected will be analyzed to assess for safety, efficacy, and appropriateness of SGLT-2 inhibitor use within the VA Connecticut Healthcare System. Results from this study are meant to improve quality of care to Veterans and to provide education to healthcare professionals at our institution.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-101

Poster Title: Utilization of the basal-bolus-correction (BBC) protocol in medical inpatients

Primary Author: Christopher Tarantino, VA Connecticut Healthcare System, CT; **Email:** chrisjt18@gmail.com

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Purpose: The purpose of this medication use evaluation is to analyze the utilization of the basal-bolus-correction insulin protocol and subsequent glycemic control during hospital admission. The data from this medication use evaluation will be used to improve awareness of insulin usage in the hospital setting and identify areas for improvement.

Methods: This retrospective chart review will include patients admitted between June 1, 2016 and August 31, 2016 who had inpatient orders for any type of insulin (glargine, aspart, novolin mix, or regular). The objective is to determine if providers are adhering to the basal-bolus-correction protocol and to assess the differences in glycemic control. The data that will be collected will include: adherence to the basal-bolus-correction protocol or not, the number of blood glucose readings (in mg/dL) greater than: 200, 300, and 400, number of blood glucose readings (in mg/dL) less than: 70 and 50. Other data will include most recent hemoglobin A1C, amount of sliding scale insulin used, type of insulin(s) used, how the insulin doses were being titrated, if the patient was being treated with corticosteroids during their admission, and where the patient was located in the hospital. Inclusion criteria will include both type 1 and type 2 diabetics with current inpatient orders for any type of insulin, and a current or historical hemoglobin A1C of greater than 6.9 percent. Individuals will be excluded from this study if their inpatient duration was less than three days, if they were admitted to the medical or surgical intensive care unit, or if they were receiving less than 10 units of insulin per day most recently as an outpatient.

Results: not applicable

Conclusion: not applicable

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-102

Poster Title: An interprofessional education initiative to reduce pharmaceutical risk in older adults at a VA healthcare facility

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Purpose: Polypharmacy is a growing concern in older adults, however, limited training is provided to healthcare trainees in medication management for geriatric patients. Approximately 50% of older adults take one or more prescribed medication that is not medically necessary. Polypharmacy and use of unnecessary medications has been associated with increased health care costs, risk of adverse drug events, drug-interactions, medication non-adherence, reduced functional capacity and potential geriatric syndromes. The purpose of this study is to evaluate outcomes for older adults after providing education to healthcare trainees to identify and analyze complex medication regimens and deprescribe potentially inappropriate medications.

Methods: The IMPROVE polypharmacy clinic (Initiative to Minimize Pharmaceutical Risk in Older Veterans) occurs one half-day per month and involves a team of interdisciplinary healthcare trainees, including residents in Internal Medicine, advanced practice nursing, pharmacy, and health psychology. Veterans age 65 and older, taking 10 or more medications, and who are appropriate for a group visit, are referred to IMPROVE for a full medication assessment. The clinic involves three sequential sessions: a pre-clinic “lunch and learn,” a trainee-led group visit, and individual trainee visits with precepting provided by a geriatrician, geriatric pharmacist, and primary care faculty. Trainees work with preceptors to optimize medication regimens and reduce the number of potentially inappropriate medications. The health outcomes measured include hospitalization and emergency department visits, urgent

visits to primary care providers, and number of medications. These outcomes will be compared with a control cohort of Veterans who receive primary care services through the Veterans Affairs healthcare system but who were not enrolled in the clinic.

Results: In progress

Conclusion: In progress

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 1-103

Poster Title: Evaluation of adherence to Veterans Affairs (VA) criteria for monitoring lithium concentrations

Primary Author: Alyssa Taqi, VA Connecticut Healthcare System, CT; **Email:** alyssa.taqi.pharmd@gmail.com

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Purpose: Lithium is an effective treatment for bipolar disorder and augmentation in depression. However, it is important to monitor lithium regularly to ensure that patients do not experience toxicity. A review of national VA data found that of approximately 17,000 Veterans prescribed lithium, 19.5 percent had not had a lithium level checked in the past nine months, despite VA guidelines that recommend monitoring lithium concentrations at least every six months. This project aimed to evaluate the compliance of providers at VA Connecticut in their lithium monitoring practices.

Methods: A national lithium monitoring dashboard was created to help assess lithium monitoring adherence at the VA by totaling the number of patients with active lithium prescriptions, the number of patients with greater than six months since the last lithium lab, and the lab completion rate. It provided information on who prescribed the lithium, the last prescription fill date, the date and result of the last lithium lab, as well as any pending lithium lab orders. We conducted a chart review of each patient's last lithium level and any pending lithium lab orders to verify the accuracy of the dashboard. Next, each patient's last mental health progress note (and progress of notes of other specialties if warranted) were reviewed, to assess the last visit date and plan for medication therapy, as well as monitoring. Through this evaluation, we identified patients who were currently being treated with lithium, but had no lithium monitoring for at least the past six months and required follow-up monitoring.

Results: As of July 21, 2016, among 235 patients at VA Connecticut who had active lithium prescriptions, 75/235 (32 percent) did not have lithium levels checked within the last six months. Approximately 54/75 (72 percent) were currently on lithium therapy, as documented on recent provider progress notes, but levels had not been obtained for the recommended

monitoring timeline. Labs were ordered but never completed for 6/54 (11 percent) of those patients. Alternatively, 11/75 (15 percent) had active prescriptions, but medications were not addressed in recent provider progress notes, or the patient was not recently seen at the VA. The remainder of patients didn't have recent lithium levels for other miscellaneous reasons. As a result of this analysis, reminder letters were sent on August 29, 2016, to providers to follow-up with patients requiring lithium level monitoring. Consequently, providers started to discontinue active lithium prescriptions for patients that were no longer taking lithium, and do follow-up lab work for those patients whose lithium was not being monitored every six months. With this intervention, the number of patients without a lithium level in the last 6 months decreased to 60/206 (29 percent), as of September 19, 2016.

Conclusion: Lithium level monitoring is an important part of lithium medication therapy due to its narrow therapeutic index. Current VA recommendations suggest monitoring lithium levels every six months, regardless of indication or length of therapy. An evaluation of lithium monitoring practices at VA Connecticut revealed a 68 percent compliance rate with recommended guidelines but improved compliance to 72 percent with intervention through reminder letters to prescribing providers. Preliminary results suggest that clinical pharmacy staff can help improve lithium monitoring adherence.

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 1-104

Poster Title: Treatment sequencing in patients with metastatic castration-resistant prostate cancer at the Washington DC, Veterans Affairs Medical Center

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Purpose: Management of metastatic castration-resistant prostate cancer (mCRPC) has undergone a major transformation since the turn of the 21st century. Despite this, mCRPC remains incurable and questions surrounding how to sequence the six available agents including chemotherapeutics (Docetaxel and Cabazitaxel), second generation antiandrogens (Abiraterone and Enzalutamide), immunotherapeutic (Sipuleucel-T), and radio-active isotope (Radium-223) remain unclear. The purpose of this study is to determine whether an optimal sequence of drugs to treat mCRPC exists. Outcome of this study could help with selecting future treatments for mCRPC in an identifiable sequence as the patient progress with mCRPC and thus, potentially extend their survival.

Methods: In determination of the optimal treatment sequences in mCRPC patients in Washington, DC Veterans Affairs Medical Center, a retrospective cohort study was conducted using local registry data. All patients with mCRPC who failed first line, second line, third line, and fourth line will be selected from the time period of July 1, 2011 through July 1, 2016. Patients who are identified by specific treatment sequences using ICD-9 and ICD-10 codes will then be evaluated for their response to therapy. We will obtain prescription and order data from the Veterans Health Information Systems and Technology Architecture (VistA). This may include prescriptions/orders for Docetaxel, Cabazitaxel, Abiraterone, Enzalutamide, Sipuleucel-T, and Radium-223. The PSA response rate and duration of PSA response rate will be reviewed sequentially as the primary and secondary endpoints, respectively. We defined PSA response rate as decrease in PSA levels by greater than or equal to 50 percent and we defined PSA progression as two consecutive increase in PSA levels of at least 1 mcg/dL one month apart from each other. We will continue to evaluate additional data points including age, medical

history, Gleason score, staging at the time of diagnosis through Computerized Patient Record System (CPRS).

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-105

Poster Title: Retrospective quality assurance review of atrial fibrillation patients without heart failure currently on digoxin without beta blocker or non-dihydropyridine calcium channel blocker therapy

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Purpose: Beta blockers and non-dihydropyridine calcium channel blockers (non-DHP CCB) are used in atrial fibrillation (AF) patients as first line therapy for rate control. Digoxin can be useful in patients with AF and heart failure (CHF) but have been shown to increase mortality when used as monotherapy in AF patients without CHF. The purpose of this medication use evaluation (MUE) is to assess monotherapy digoxin use for the treatment of AF in patients without CHF who have no documented prior use of first line beta blockers or non-DHP CCB, and in which there are no contraindications for these first line agents.

Methods: This medication utilization review was reviewed by the Bay Pines VA Healthcare System Research and Development Service and was deemed a quality improvement project and not research. This MUE, which is part of a nationwide Centrally-Aggregated MUE (CAMUE), will utilize a retrospective database extraction (performed by VAMedSAFE) which will identify patients receiving outpatient digoxin monotherapy who have a diagnosis of AF without a diagnosis of CHF during Q4 of 2015 and Q1 of 2016 based on ICD-9 codes. Identified patients will undergo a chart review in which confirmation of AF diagnosis and absence of CHF will be verified prior to collection of other pertinent information including: non-VA past/concomitant use of beta blockers or non- DHP CCB therapy; contraindications to first line AF therapy; indication, dose, and duration of digoxin therapy; monitoring of serum creatinine, potassium, and digoxin levels; signs/symptoms of digoxin toxicity; prescriber specialty; demographics; and place of residence. All data collected will be de-identified and stored in an excel spreadsheet within the controlled access pharmacy group drive folder. This information will be used to determine if individual patients are candidates for discontinuation of digoxin therapy.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-106

Poster Title: Evaluation of fluoroquinolone utilization within Bay Pines VA Healthcare System

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Purpose: Fluoroquinolones are no longer first-line antibiotics in the treatment of uncomplicated urinary tract infections (UTIs) or upper respiratory infections (URTIs). A safety review conducted by the Food and Drug Administration found fluoroquinolone use to be associated with disabling and potentially permanent side effects. Additionally, fluoroquinolones have also been linked to an increased risk of Clostridium difficile infections and have suboptimal local susceptibility rates. Given the concerns surrounding fluoroquinolone use, an evaluation of their current utilization is warranted. The purpose of this medication use evaluation is to evaluate the appropriateness of fluoroquinolone utilization within the Bay Pines VA Healthcare System.

Methods: This evaluation has been reviewed by the Institution's Office of Research and Development and has been determined to be exempt from review by an Institutional Review Board. A retrospective chart review will be performed on patients with outpatient prescriptions for fluoroquinolones prescribed between July 1, 2016 and July 31, 2016 with a treatment indication for a UTI or URTI. The following orally-administered fluoroquinolones will be reviewed: levofloxacin, ciprofloxacin, and moxifloxacin. The corresponding indication and duration of therapy will be gathered through the patient record and evaluated for appropriateness. Probable pseudomonal infection based on culture history, infection caused by an organism that is not susceptible to alternative antibiotics, or empiric therapy for which no reasonable alternative antibiotic exists will be considered appropriate. Empiric therapy with fluoroquinolones will be considered appropriate if there is a documented penicillin and/or sulfa allergy which preclude the use of an alternative susceptible antibiotic or treatment failure of an alternative antimicrobial agent. Collected data will be stored in a limited-access folder within the pharmacy group drive. The fluoroquinolone used and the indication will be documented as

categorical variables and presented as percentages without statistical analysis. The duration of therapy will be documented as the number of days and will be summarized using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-107

Poster Title: Quality assurance review to determine the effectiveness of a conversion of lidocaine 5 percent ointment to lidocaine 4 percent cream

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Additional Author (s):
Amanda Schmig

Purpose: Topical lidocaine is a medication used to numb tissues and treat localized pain. In a September 2015 cost-savings initiative, the pharmacy and therapeutics committee approved a conversion of lidocaine 5 percent ointment to lidocaine 4 percent cream, a product which could potentially be used to result in similar amounts of topical anesthesia. The purpose of this medication utilization evaluation is to evaluate the effectiveness of lidocaine 4 percent cream compared to lidocaine 5 percent ointment in patients who were converted due to this initiative.

Methods: This medication utilization review was reviewed by the Bay Pines VA Healthcare System Research and Development Service and was deemed a quality improvement project and not research. A retrospective chart review will be performed on patients converted from lidocaine 5 percent ointment to lidocaine 4 percent cream from September 2015 to July 2016. Success will be defined as patients remaining on the lidocaine 4 percent cream. Failure will be defined as patients who have been changed to an alternative topical lidocaine product. Data will be collected in an excel spreadsheet and stored in a limited access folder.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-108

Poster Title: Retrospective quality assurance review to compare the effectiveness of filgrastim versus tbo-filgrastim by assessing changes in neutrophils counts and occurrence of complications following use

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Additional Author (s):
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Purpose: Filgrastim and tbo-filgrastim are human granulocyte colony stimulating factors (G-CSF) used in patients with non-myeloid malignancies after receipt of myelosuppressive chemotherapy to reduce the extent and duration of severe neutropenia. In September 2015, a hospital-wide formulary change resulted in the replacement of filgrastim with tbo-filgrastim at Bay Pines Veterans Affairs Health Care System (VAHCS). It was determined that a retrospective comparison should be performed to assess the effectiveness of filgrastim versus tbo-filgrastim at increasing neutrophil counts and in improving patient outcomes. The purpose of this medication use evaluation is to determine if these two agents yield similar results following administration.

Methods: This evaluation was reviewed by the institution's Office of Research and Development and has been determined to be exempt from review by an institutional review board. Retrospective chart review will be performed on Veteran patients receiving chemotherapy who were treated with filgrastim from January 1st through September 30th, 2015 and those treated with tbo-filgrastim from October 1st, 2015 through June 30th, 2016. Patient records will be evaluated to determine the impact filgrastim and tbo-filgrastim had on the following outcomes: duration and extent of neutropenia, number of doses needed to reverse neutropenia and, if applicable, the number of days chemotherapy was withheld due to neutropenia. Neutrophil counts as well as duration of neutropenia in days (defined here as absolute neutrophil count (ANC) less than 1,500 cells per cubic millimeter) will be evaluated

separately for prophylaxis and treatment. As complete blood counts are not monitored on a daily basis in outpatients, admissions for complications such as febrile neutropenia, septic episodes, and treatment with antibiotics following G-CSF administration will also be queried. Collected information will be maintained in an excel spreadsheet format and stored in a limited access folder. Most data will be analyzed using descriptive statistics with the exception of complications, which will be analyzed as documented occurrence of infection and will be reported as binary results. Data will be presented as averages or percent occurrences.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-109

Poster Title: Retrospective quality assurance review to determine the effects of routine use of melatonin on INR in chronic warfarin therapy

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Additional Author (s):
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Purpose: Melatonin is an herbal supplement used for insomnia and is thought to be relatively safe with few drug interactions. However, melatonin may moderately interact with warfarin. In the Veterans Affairs Healthcare System, warfarin is a formulary medication frequently used for blood clot prevention. The concurrent use of warfarin and melatonin may present an increased risk of bleeding along with an elevated International Normalized Ratio (INR). The purpose of this medication utilization evaluation is to determine if the INR of patients on chronic warfarin therapy is altered due to the routine use of melatonin and to assess occurrence of bleeding events.

Methods: This medication utilization evaluation was reviewed by the Bay Pines VA Healthcare System Research and Development Service and was deemed a quality improvement project and not research. A retrospective chart review will be performed on patients who utilized the BPVAHCS anticoagulation clinic for INR monitoring while on warfarin therapy from June 1, 2014 to August 1, 2016. Of these patients, only those with a least one recorded therapeutic INR, as defined by the VA/DOD Guidelines, and used warfarin along with melatonin on a regular basis will be reviewed. Regular basis use of melatonin will be defined as melatonin use for three or more days per week during the study trial period. Patient data that will be recorded from every patient chart include age, gender, reason for warfarin therapy, and any changes in adjuvant medication therapy. Each patient meeting criteria will have their INR recorded from subsequent clinic visits as well as their melatonin therapy, including dose and frequency of use, any bleeding events, and medication changes. The previously described information will be collected and stored in a controlled-access folder using an excel format. Data will be analyzed

as observational occurrences and will be documented as binary results. The data will be presented as percent occurrences without statistical analysis.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-110

Poster Title: Quality assurance review of appropriate buprenorphine use and strategies to streamline the review process

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Additional Author (s):
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Purpose: Buprenorphine (or buprenorphine/naloxone) was the first agent in the United States available for the treatment of opioid dependence in an outpatient setting. Buprenorphine is indicated for the induction and maintenance therapy of opioid dependence. Due to buprenorphine's mechanism of action there is a potential for abuse and requires close monitoring. The VA outpatient use of buprenorphine should meet specific criteria to be appropriate. The growing number of buprenorphine prescriptions has produced an increasingly time consuming review process. The purpose of this medication use evaluation is to assess the appropriateness of buprenorphine prescribing and to streamline the review process.

Methods: A retrospective chart review will be performed on patients who received an outpatient prescription for buprenorphine or buprenorphine/naloxone during 2015. The appropriateness of the prescriptions will be evaluated based on the following criteria: prescription was written at a recent appointment with an authorized prescribing practitioner (defined as plus or minus 14 days from written prescription date), recent clean urine drug screen (defined as plus or minus 14 days from written prescription date), and that the patient is not concomitantly treated with a benzodiazepine, patient is not concomitantly treated with an opioid. Inpatient orders for buprenorphine will be excluded. Patients treated with high dose chronic diazepam or methadone will not be required to have clean urine drug screens prior to induction. Collected information will be maintained in an excel spreadsheet and stored in a controlled access folder under the pharmacy group drive. The data will be analyzed as integers, ratios and percent. The chart review procedure for evaluating each prescription will be reengineered to streamline the review process. The above information is intended solely for usage on this medication use evaluation and is not to be distributed or utilized for any other purpose.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-111

Poster Title: Quality assurance review of a prescription voucher program in a Department of Veterans Affairs Healthcare System

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Additional Author (s):
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Purpose: The Heritage Health Solutions (HHS) prescription voucher program is utilized to provide acute care prescriptions to Veterans assigned to Veterans Affairs community based outpatient clinics. With this program, Veterans are able to fill acute care medications at local contracted pharmacies at no co-pay at the time of service. HHS is a company that manages the finances of Heritage program prescriptions. Reviewing submitted invoices from HHS is critical to ensure the proper management of funds. The purpose of this project is to assess the current utilization of the Heritage prescription voucher program with regards to quality assurance.

Methods: This evaluation has been reviewed by the institution's Office of Research and Development and has been determined to be exempt from review by an institutional review board. A retrospective review will be performed comparing the clinical pharmacists' prescription database with the invoices received from Heritage Health Solutions from July 1, 2016 to September 30, 2016. The aforementioned database and invoices will be reconciled for discrepancies. The electronic medical record (EMR) will be utilized to elucidate the etiology of inconsistencies. Discrepancies will be presented as percent occurrences per month and total cost variances per month. Collected information will be maintained in an excel spreadsheet and stored on a pharmacy group drive in a controlled-access folder.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-112

Poster Title: Impact of recent labeling changes for metformin on the potential for increased use in patients with type 2 diabetes, in a Veterans Affairs outpatient population

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Purpose: Metformin is first-line for treatment of type 2 diabetes mellitus (T2DM). It was previously contraindicated in patients with a serum creatinine (SCr) of 1.4 mg/dL or greater in females and 1.5 mg/dL or greater in males due to risk for metformin associated lactic-acidosis. In 2016, the Food and Drug Administration published recommendations for utilizing estimated glomerular filtration rate (eGFR) to predict appropriate levels for starting and discontinuing metformin in patients with reduced renal function. The purpose of this evaluation is to identify patients with uncontrolled T2DM and reduced renal function who may be eligible for metformin treatment under new recommendations.

Methods: This MUE has been deemed a quality improvement project by the Bay Pines VA Research and Development Service. A database query from July 2015 to July 2016 will be conducted to identify patients with a diagnosis of T2DM, a hemoglobin A1c of 7 percent or greater, absence of an active prescription for metformin, SCr of 1.4 mg/dL or greater in females or 1.5 mg/dL or greater in males, and eGFR of greater than 45 ml/minute/1.73 m2. Patients with a documented allergy or intolerance to metformin will be excluded. Patients will then be stratified based on prior metformin use. A retrospective chart review will be performed to identify alternative factors that may preclude metformin use such as a comorbidity that may increase the risk for lactic acidosis. Information will be converted into YES/NO data and maintained electronically in a controlled-access drive. Data collected will be used to establish quality improvement initiatives based on updated FDA recommendations for metformin prescribing.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-113

Poster Title: ENDORSE (ENcouragement for Dose of Opiate Reduction for Safety and Engagement) project: Opioid reduction via utilization of a direct-to-consumer brochure

Primary Author: Courtney Deshauer, Gulf Coast Veterans Health Care System - Joint Ambulatory Care Center, FL; **Email:** cdeshauer@gmail.com

Additional Author (s):
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Purpose: The goal of this quality improvement project is to reduce high dose opioid use in the Gulf Coast Veterans Health Care System (GCVHCS) through patient empowerment via education.

Methods: The ENDORSE brochure "Opioid Medications," written at an eighth grade reading level, discusses some of the risks associated with high dose opioid use. This project will involve mailing the ENDORSE brochure to GCVHCS patients prescribed a 100 mg or greater morphine equivalent daily dose. Mailing will occur two to six weeks prior to an upcoming scheduled appointment. The expectation is that after receiving the brochure, patients will be more likely to engage in discussions regarding opioid tapers, alternative ways to manage pain, and the dangers of high dose opioid use. By October 28th 2016, all remaining high dose opioid patients will be mailed the brochure if they have not already received it. Prior to mailing the brochures, education will be provided to healthcare professionals in the GCVHCS to familiarize them with the project and ensure they have access to additional information regarding pain management and opioid tapers. Six months after the ENDORSE brochures have been mailed to patients, the high dose opioid patients will be reviewed to determine if an opioid taper has been started and what percentage the opioid dose has been reduced by, if they are now on less than a 100 mg morphine equivalent daily dose, or if they are no longer using opioids.

Results: Project is ongoing at this time.

Conclusion: Project is ongoing at this time.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-114

Poster Title: Implementation and evaluation of an opioid overdose education and naloxone distribution clinic at a Veterans Affairs outpatient ambulatory care center

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Additional Author (s):
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Purpose: Recent statistics from Centers for Disease Control and Prevention reveal the United States has been confronted by an unrelenting opioid epidemic, with the number of fatalities caused by prescription opioids quadrupling since the end of the 20th century. Data indicates that compared to the non-Veteran population, Veterans are twice as likely to die from accidental overdose. The objective of this quality improvement initiative is to demonstrate that opioid education and naloxone prescribing will lead to a reduction in opiate-related overdose, while potentially influencing opiate prescribing trends and cost savings in a Veterans Affairs healthcare system.

Methods: This is a quality improvement initiative that will be submitted to the local Institutional Review Board for exemption determination. Veterans at an increased risk for opioid overdose will be identified through utilization of the Department of Veterans Affairs (VA) Stratification Tool for Opioid Risk Mitigation. Based on risk severity, Veterans will be contacted and offered the opportunity to receive opioid education and a naloxone prescription. The following data will be recorded and maintained confidentially: patient demographics, opioid name, dosage in milligrams of morphine equivalents, units dispensed per 30 days, clinical indication, initial prescribing date of naloxone, time spent per encounter, naloxone refills requested, naloxone administration outcomes, and emergency department visits related to opioid use during initiative. Opioid Overdose Education and Naloxone Distribution educational materials created by the VA Academic Detailing Services will be utilized and distributed within the clinic. Patients who complete overdose and naloxone training will be offered the opportunity to receive a naloxone prescription. Documentation of naloxone education, dispensing, administration, or patient refusal will be performed with the issuance of the first

prescription and upon each renewal using the VA Computerized Patient Record System. Data will be analyzed utilizing standard descriptive statistics. Results will help identify if opioid education and naloxone prescribing decreased opiate-related overdose and opiate prescribing in a cost-effective manner.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-115

Poster Title: Standardization of contrast media at the Miami Veterans Affairs Medical Center

Primary Author: Navene Shata, Miami VA Health Care System, FL; **Email:** navenejb@live.com

Additional Author (s):
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Jacqueline Meaney

Purpose: Imaging procedures are increasingly common today, using a wide variety of imaging modalities and contrast media. The goal of this project is to consolidate the oral and intravenous radiologic contrast products that are used for various procedures at the Miami Veterans Affairs (VA) Medical Center. This is a quality improvement project that will not only streamline ordering of products for physicians, but will also reduce the financial impact associated with these products. In completing the project, we will be able to identify the most cost-effective radiology products, in order to optimize the products that are stocked in the pharmacy.

Methods: This study has been submitted to the Institutional Review Board for approval. An extensive retrospective review will be conducted on all radiopharmaceuticals that were ordered and removed from the automated dispensing unit (ADMU) at the Miami VA Medical Center between August 1st, 2015 and August 1st, 2016. Variables that will be assessed include contrast media and other radiopharmaceuticals, dose, route, administration records, the imaging procedure that the product was ordered for, and patient allergies. This data will be collected using the Computerized Patient Record System (CPRS) at the Miami VA Medical Center and through a review of ADMU removals. The data will be stratified based on the route, radiopharmaceutical product, and imaging procedure. With the background data and hospital-wide usage data, we will analyze the cost of each product per year. We will then be able to identify cost-effective ways to use these radiologic products for our patients. Lastly, we will take the finalized data that we have collected, and we will present it to the physicians who commonly order radiology products, in order to come up with a standardized set of radiology medications, which will allow us to optimize the products that are stocked in the pharmacy, while eliminating radiology medications that are less cost-effective. The data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 1-116

Poster Title: Product standardization initiative at the Miami Veterans Affairs Medical Center's spinal cord pharmacy

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Additional Author (s):
Idalmys Milo
Alga Ramos-Morales
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Mara Carrasquillo

Purpose: It is estimated that around 42,000 American veterans have a serious spinal cord injury. To meet the needs of this population, the Miami VA has a spinal cord pharmacy designated to dispense essential medical supplies and medications. The objective of this quality improvement project is to facilitate the dispensing process of spinal cord products by standardizing current inventory to match the items dispensed from the mailing facility. Additionally, different vendors will be evaluated for further cost savings. As part of multiple improvement projects, we estimate this venture will improve access to these products and optimize utilization of pharmacy resources.

Methods: Spinal cord products on hand will be reviewed and compared to products listed in the Miami VA's drug file in an effort to assure products in the pharmacy match products selected for dispensing. We will then compare products supplied by two different vendors, Medline and Independence Medical. After equivalence is established, we will perform a cost savings analysis evaluating the cost of the product and availability at the mailing facility to select a vendor of spinal cord medical supplies and medications. After ensuring product standardization, we will run a report of all products dispensed within a year, from August 31, 2015 to September 1, 2016, in the spinal cord pharmacy. After review of report, we will prioritize the stock of the most frequently dispensed products in the spinal cord pharmacy in an effort to optimize pharmacy space. Furthermore, after evaluating quantity of dispensed products, we will designate a sufficient amount to keep stocked in the spinal cord pharmacy in order to provide only an initial supply of medical supplies; allowing the remainder of the supply to be mailed via the mailing facility.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-117

Poster Title: Post-implementation assessment of intravenous drug administration policy at the Miami Veterans Affairs Medical Center

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Additional Author (s):
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Purpose: The Miami Veterans Affairs Medical Center recently updated the medication administration policy to identify intravenous (IV) medications that could be rapidly injected. Previous literature had shown that rapid infusion minimizes delays in time to administration, and achieves cost-minimization. This project was designed to assess the application of the policy set forth and the financial impact on the facility. The project will also identify additional drugs that could potentially be administered as IV push.

Methods: A retrospective analysis will be conducted on Intravenous drug orders processed between August 2015 to August 2016 at the Miami Veterans Affairs Medical Center. Variables assessed will be medication, dose, infusion rate, medical unit, and administration schedule. The following orders will be excluded from the analysis: intravenous drips, electrolyte solutions, crystalloids and colloids solutions. Remaining orders will be stratified by medication and infusion rate and evaluated for observance of policy. Cost-savings will be evaluated using the difference in material costs between the procurement of the IV push dose versus IV mini bag dose. Orders currently not included in the medication administration policy will be considered for possible IV push inclusion based upon patient safety, cost containment, and workload encumbrance. Descriptive statistics (frequency, percentages) will be used to measure compliance with the medication administration policy.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 1-118

Poster Title: Evaluation of the 'Choosing Wisely: Hypoglycemia Safety Initiative' at the North Florida/South Georgia Veterans Health System

Primary Author: Samantha Orth, North Florida/South Georgia Veteran Health System, FL; **Email:** samanthalorth@gmail.com

Additional Author (s):
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Purpose: The 'Choosing Wisely: Hypoglycemia Safety Initiative' (HSI) is a national Veterans Health Administration (VHA) directive aimed at identifying patients at high risk for hypoglycemia. It utilizes evidence supported within both primary literature and guideline recommendations to construct a model for tailoring patient-specific treatment goals, with a focus on creating an environment suitable for shared decision making between patients and providers. The purpose of this report is to assess the efficacy of the 'Choosing Wisely: Hypoglycemia Safety Initiative' within the North Florida/South Georgia Veterans Health System and to propose a plan for further expansion throughout the health system.

Methods: This project is approved as Continuous Quality Improvement (CQI) through the University of Florida Institutional Review Board. The cornerstone of the Hypoglycemia Safety Initiative is to identify patients at high risk for hypoglycemia and screen them for the occurrence of hypoglycemic episodes. The initiative defines 'high-risk' for hypoglycemia as any patient with a hemoglobin A1c less than or equal to 7% with an active prescription for either insulin or a sulfonylurea, plus at least one additional risk factor: age greater than or equal to 75 years old, a diagnosis of dementia or cognitive impairment, or serum creatinine greater than 1.7 mg/dL. Hypoglycemia assessments are conducted through the use of a Clinical Reminder in the Computerized Patient Record System (CPRS) that prompts for completion in patients that meet these criteria. The Clinical Reminder consists of a series of four questions focused primarily on the frequency and severity of hypoglycemic episodes. Screening takes place in the clinic setting as well as via telephone by either a primary care provider or clinical pharmacist. A secondary yet significant aim of this project is to create and perform education surrounding the

HSI through the process of academic detailing. Seminars are planned in both large and small forums as well as in one-on-one sessions to educate healthcare providers about this important safety and quality assurance initiative.

Results: A review of the HSI database revealed that over 2,200 patients within the North Florida/South Georgia Veterans Heath System are at high-risk for hypoglycemia, which is compared to over 82,000 patients nationally. The HSI pilot period began in April 2015 with select primary care physicians and pharmacists within the North Florida/South Georgia Veterans Health System. Following a grand rounds presentation in August 2015, all primary care providers in attendance were educated on the initiative and encouraged to participate. Other supplementary educational efforts were performed as needed in various settings within pharmacy, primary care, diabetes focus groups, and informal exchanges. Collectively during the first year of implementation, 62 patients were identified by the HSI and assessed for hypoglycemia. Of those 62 patients, 17 patients reported at least one episode of hypoglycemia resulting in 16 cases of relaxation of therapy. Of the 45 patients that did not report at least one episode of hypoglycemia, 10 patients warranted relaxation of therapy as determined by their provider. Overall, a total of 26 out of 62 patients [42%] had diabetic regimens relaxed.

Conclusion: The 'Choosing Wisely: Hypoglycemia Safety Initiative' aims to create an environment in which patients and caregivers, alongside providers, are extended the opportunity to make shared decisions regarding diabetes management. Nearly half of patients identified by the HSI had diabetic therapy relaxed regardless of hypoglycemic episodes, leading the authors to believe that the HSI is indeed encouraging these shared conversations. Looking ahead, complete implementation of the HSI within the North Florida/South Georgia Veterans Health System is expected January 2017 as clinical pharmacists accept a major role in executing this initiative. Until that time, ongoing educational efforts and data collection will continue.

Submission Category: Clinical Services Management

Submission Type: Descriptive Report

Session-Board Number: 1-119

Poster Title: Assessment of a pharmacist managed nintedanib and pirfenidone phone clinic for the treatment of idiopathic pulmonary fibrosis in a veterans health system

Primary Author: Courtney Guidry, North Florida/South Georgia Veterans Health System, FL; **Email:** courtney.guidry@va.gov

Additional Author (s):
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Purpose: Two drugs, nintedanib and pirfenidone, were recently approved for treatment of idiopathic pulmonary fibrosis (IPF). While not curative, these medications demonstrated a slowing of disease progression in clinical trials. Use of these medications is associated with treatment-limiting adverse effects, elevations in liver function enzymes and substantial cost. Frequent monitoring is needed, especially early on in treatment, to assure safety, tolerability, adherence and appropriate use. This quality assurance project assessed an existing pharmacist managed phone clinic of patients using nintedanib or pirfenidone for IPF as a means of assuring optimal clinical and fiscal outcomes.

Methods: A retrospective chart review was conducted on all patients initiated on either pirfenidone or nintedanib within a veterans health system since the medications were approved for use by the Food and Drug Administration (FDA). Patients were reviewed from February 2015 to May 15, 2016. Patients were evaluated in accordance with the VA Pharmacy Benefits Management (PBM) criteria for use (CFU). Patients met criteria and were eligible to receive pirfenidone or nintedanib if they were followed by a VA pulmonologist and had a diagnosis of IPF that met American Thoracic Society, European Respiratory Society, Japanese Respiratory Society, and the Latin American Thoracic Association (ATS/ERS/JRS/ALAT) diagnostic requirements. Once approved for treatment, all patients received a telephone call from the pharmacist prior to starting treatment for medication counseling and were provided with an initial 2 week supply of medication to ensure tolerability and minimize drug waste. Pharmacists followed up with the patient within 10 days of starting medication to assess tolerability. Patients were then provided with a 30 day supply of medication. Pharmacists followed up with the patient monthly via phone to address medication compliance, tolerance, arrange required monthly laboratory monitoring, and arrange medication refills. Pharmacists

coordinated with the pulmonary provider to order labs, address adverse effects and recommend dosage adjustments when necessary. All pharmacist encounters with the patient were recorded in the electronic medical record.

Results: A total of 32 patients were identified as receiving either pirfenidone or nintedanib since February 2015. Twenty-one (66%) patients received nintedanib only, nine (28%) received pirfenidone only, and two (6%) patients had separate trials of both agents. The average patient age was 71.5 years, and average duration of therapy was 5.8 months. All patients reviewed met VA PBM CFU for nintedanib or pirfenidone. At the time of chart review, 41% of patients had discontinued treatment. Eleven (48%) nintedanib patients and two (18%) pirfenidone patients discontinued therapy. The most common reason for discontinuation was liver function test elevations with nintedanib followed by nausea/abdominal pain and diarrhea with nintedanib. Five (16%) patients had a fall-out of greater than 60 days between required lab monitoring. Fourteen (44%) patients experienced an adverse event while on therapy. Most (78%) adverse events occurred while on nintedanib. Diarrhea was the most common adverse event, followed by abdominal pain/nausea. The medication possession ratio for patients on therapy was 99.7% and all patients reported taking the prescribed dosage when questioned. A total of 136 patient/pharmacist phone calls were documented since clinic inception. Pharmacists sent 39 requests for lab monitoring and were alerted or contacted 8 times regarding adverse events.

Conclusion: All patients evaluated in this review met VA PBM CFU to receive either pirfenidone or nintedanib. The high frequency of adverse events with these medications often requires dosage adjustments or discontinuation of therapy. Specialty drug clinics provide pharmacists the unique opportunity to ensure safe and appropriate use of high-cost medications. Additional indications and combination therapy are on the horizon for nintedanib and pirfenidone. Inclusion of a dedicated pharmacist with a scope of practice to the IPF clinic could streamline current processes, improve adherence rates for lab monitoring and continue to ensure appropriate use of these medications while optimizing fiscal outcomes.

Submission Category: Critical Care

Submission Type: Evaluative Study

Session-Board Number: 1-120

Poster Title: Evaluation of a bedside computerized clinical decision support tool for intravenous insulin infusion management in critically ill medical patients.

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Andrew Franck

Purpose: Blood glucose control is a fundamental aspect of care for critically ill patients as both hyper- and hypoglycemia are associated with negative outcomes. A validated intravenous insulin infusion protocol targeting a blood glucose range of 140-180 mg/dl is the recommended method of blood glucose control for most intensive care unit (ICU) patients. Validated protocols with computerized clinical decision support tools targeting this blood glucose range are needed. The purpose of this study was to evaluate the safety and effectiveness of a computerized clinical decision support tool for insulin infusion protocol developed at North Florida/South Georgia Veterans Health System (NF/SG VHS).

Methods: The clinical pharmacy service at NF/SG VHS developed a bedside computerized clinical decision support tool to assist the ICU nursing staff with the management of our intravenous insulin infusion protocol. The tool incorporated the paper-based intravenous insulin infusion protocol developed by the University of Pittsburgh Medical Center. To evaluate the safety and effectiveness of this tool, a retrospective case series was conducted including all patients who were admitted to the medical intensive care unit (MICU) between May 1, 2015 and December 15, 2015 and who were treated with the intravenous insulin infusion protocol for at least 12 hours for blood glucose control. Patients receiving intravenous insulin infusion for the treatment of hyperglycemic crises or for indications other than blood glucose control were excluded. Baseline demographic data was collected. The effectiveness outcomes included time to achieve target blood glucose range (140-180 mg/dl), proportion of blood glucose readings within target blood glucose range, and median blood glucose value once target blood

glucose range was achieved. The safety outcome was frequency of hypoglycemia (blood glucose less than 70 mg/dl) while receiving the insulin infusion protocol. Local institutional review board approval was obtained.

Results: Twenty-four male patients with a mean age of 63 years were included in this analysis. Five patients (21 percent) were considered to have normal body weight, six patients (25 percent) were overweight, and 13 patients (52 percent) were obese. The mean BMI for all patients was over 35 kg/m2. Twenty-two patients (92 percent) had a history of diabetes prior to MICU admission. The mean baseline APACHE II score was 17. The mean baseline blood glucose prior to initiation of insulin infusion was 331 mg/dl. The mean time to achieve goal blood glucose (less than 180 mg/dl) was 8.3 hours from the start of the insulin infusion. After goal blood glucose was reached, the median blood glucose was 164 mg/dl (IQR 144-187 mg/dl). Blood glucose was within the desired range for 48 percent of blood glucose values. Blood glucose was within the range of 100-180 mg/dl and 100-200 mg/dl for 67 percent and 82 percent of blood glucose values, respectively. The median duration of insulin infusion was 26 hours. One episode of mild hypoglycemia occurred (blood glucose 67 mg/dl), translating to 0.09 percent of all BG values and 0.06 events per 100 hours of insulin infusion.

Conclusion: The protocol utilized in this analysis was found to be safe as defined by a low occurrence of hypoglycemia. The effectiveness of the protocol in achieving and maintaining blood glucose within a target blood glucose range was similar to previously reported data. Our bedside computerized clinical decision support tool appeared to be useful in the management of an intravenous insulin infusion protocol for blood glucose control in MICU patients.

Submission Category: Infectious Diseases

Submission Type: Case Report

Session-Board Number: 1-121

Poster Title: Decreased renal function after initating treatment with sofosbuvir/ledipasvir: A Patient Case

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Purpose: Case Report: This case series shows the effect of ledipasvir/sofosbuvir on creatinine levels.

Patient A is a 65 year old African American male who was evaluated to begin treatment for his genotype 1a hepatitis C infection in June 2016. Patient was treatment naïve, had no evidence of cirrhosis, and had less than 6 million copies of HCV RNA so an 8-week course of ledipasvir/sofosbuvir was chosen to treat his infection. Patient started treatment on 6/27/16 and his baseline serum creatinine level was 1.0 mg/dL. After 4 weeks of treatment with ledipasvir/sofosbuvir, the patient's viral load was undetected and his serum creatinine increased to 1.4 mg/dL, an increase of 0.4 mg/dL. Patient A denied medication changes that could account for the increased creatinine level. As his creatinine clearance was still above 30 mL/min, which is the creatinine clearance value at which ledipasvir/sofosbuvir should be continued, his HCV treatment was continued for the remainder to treatment. After 8 weeks of therapy, patient A's viral load was still undetected, but his serum creatinine decreased to 1.3 mg/dL; however, this is still above his baseline. A review of his renal function after 12-weeks off therapy will help determine if this is a transient or permanent increase in creatinine associated with ledipasvir/sofosbuvir.

Patient B is a 64 year old African American male who was also evaluated to begin treatment for his genotype 1a hepatitis C infection in June 2016. Patient was treatment naïve, had no evidence of cirrhosis, and had more than 6 million copies of HCV RNA at baseline so a 12-week course of ledipasvir/sofosbuvir was initiated. Patient started treatment on 6/24/16 and his baseline serum creatinine was 1.2-1.3 mg/dL (patient's creatinine fluctuated between the two values for 6 months prior to treatment). After 4 weeks of treatment his viral load was still detected and his serum creatinine increased to 1.6 mg/dL, and increase of 0.3 mg/dL. As his creatinine clearance remained above 30 mL/min, ledipasvir/sofosbuvir was continued. After 10

weeks of treatment, patient A's viral load was undetected and his serum creatinine had decreased to 1.4 mg/dL, but was still above baseline. At the end of treatment, or 12 weeks, patient's serum creatinine returned to his baseline with a value of 1.2 mg/dL.
As this case series suggest, initiation of ledipasvir/sofosbuvir may be associated with an increase in creatinine. While more studies will be needed to determine if this increase in creatinine is seen in a majority of patients who start ledipasvir/sofosbuvir, it is important for providers to be aware that this increase in creatinine could occur in their patients.
Methods: N/A
Results: N/A
Conclusion: N/A

Methods:

Results:

Conclusion:

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-122

Poster Title: Impact of rapid antigen detection testing (RADT) on antibiotic prescribing patterns for acute pharyngitis in ambulatory care clinics of a Veteran Affairs (VA) Medical Center

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Additional Author (s):
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Purpose: The Infectious Diseases Society of America (IDSA) guidelines recommend RADT as a quick and valid alternative diagnostic test to throat cultures for diagnosing Group A streptococcus pharyngitis. The first phase of this study was conducted to assess adherence of prescribed antibiotics to current treatment recommendations for acute pharyngitis. The purpose of this second phase is to evaluate the impact on antimicrobial prescribing as a result of RADT implementation in March 2015.

Methods: This study has been approved by the Institutional Review Board. A retrospective chart review of patients diagnosed with acute pharyngitis from March 2015 to March 2016 will be conducted. Patients 18 years of age and older with a single diagnosis of acute pharyngitis during the study period will be included. The following patients will be excluded: chronic diagnosis of pharyngitis, subsequent patient visits with diagnosis of acute pharyngitis, concomitant infections, incorrect primary diagnosis code or restricted health records. A patient list will be obtained through a computer-generated report using billing codes from the International Classification of Diseases, 9th (ICD-9) and 10th Revision (ICD-10) for acute pharyngitis. Data points collected will include: patient age, race, gender, tobacco and alcohol usage, immunocompromising conditions, chronic diseases, antibiotic use or hospitalization within the previous three months, chief complaint, drug allergies, serum creatinine, RADT and throat culture results, provider type, type of interaction between provider and patient, and antibiotic prescription information. Antibiotics will be classified as adherent with guidelines if the medication dosage, frequency, and duration match the guideline recommendations. Adherence frequencies before and after implementation of RADT will be compared to determine the impact of RADT on antibiotic prescribing patterns.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 1-123

Poster Title: Evaluation of influenza and pneumococcal vaccinations in patients receiving intravenous chemotherapy at a Veterans Affairs Medical Center

Primary Author: Thierry Phouthavong, Orlando VA Medical Center, FL; **Email:** thierry.phouthavong@va.gov

Additional Author (s):
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Purpose: Patients receiving chemotherapy are at high risk for complications from influenza and pneumonia. Complications may result in treatment delays, hospitalizations, increased healthcare costs, and increased mortality. Despite concern for inability to mount optimal immunological response, studies show patients receiving chemotherapy benefit from vaccinations. Therefore, the Advisory Committee on Immunization Practices (ACIP) recommends influenza and pneumococcal vaccinations at least two weeks prior to chemotherapy initiation. Timing of vaccinations for patients already receiving chemotherapy remains unclear. The aim of this evaluation is to determine rates of influenza and pneumococcal vaccinations among patients receiving chemotherapy in accordance with ACIP guidelines.

Methods: This quality initiative does not require IRB approval. The initiative will evaluate rates of influenza and pneumococcal vaccinations among patients receiving intravenous chemotherapy at a Veterans Affairs Medical Center. Patients receiving intravenous chemotherapy from September 2015 – February 2016 will be identified via a computer-generated report from the electronic medical record. The evaluation will include age, gender, comorbidities, cancer diagnosis and treatment frequency, administration of rituximab/obinutuzumab, documentation of an offering of influenza and pneumococcal vaccinations, timing of administration of vaccinations in relation to chemotherapy treatment, absolute lymphocyte count at time of administration, adverse reactions to vaccinations, and documented cases of influenza. The evaluation will exclude patients with a documented allergy to any of the vaccinations, contraindication to intramuscular injections, receiving chemotherapy

for a non-cancer diagnosis, or who have undergone previous stem cell transplant. Further process intervention will be determined based on the findings of this evaluation.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-124

Poster Title: Evaluation of mailed outpatient antimicrobial prescriptions for acute infections dispensed from a Veterans Affairs Medical Center (VAMC)

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Purpose: In the VAMC, Veterans receive prescriptions primarily by picking-up at the pharmacy, mail from the local VAMC, or mail from a Consolidated Mail Outpatient Pharmacy (CMOP). Literature has shown that a delay in antimicrobial therapy may be associated with increased mortality. The utilization of mail-order pharmacy services for acutely-indicated outpatient antimicrobial prescriptions may cause a delay in the time-to-treatment initiation. The goal of this process improvement project is to analyze dispensing processes of acutely-indicated antimicrobials in order to identify opportunities for improvement and subsequently develop and implement interventions, as necessary, to reduce time-to-prescription receipt.

Methods: To determine the scope and direction for this project, a report containing all outpatient antimicrobials dispensed from August 2015 to July 2016 from a VAMC will be generated from a Veterans Affairs (VA) database and analyzed. CMOP dispensing and delivery information will be reviewed via an integrated CMOP web application. Time-to-prescription receipt for acutely-indicated outpatient antimicrobial prescriptions dispensed by mail will be calculated by determining the difference in time (days) from the prescription issue date to the prescription delivery date. Outpatient antimicrobial prescriptions must meet the following inclusion criteria: dispensed by mail, days' supply of 14 days or less, marked as original (as opposed to refill). Prescriptions will be excluded if they meet any of the following criteria: antimicrobials that are only indicated for chronic infections, marked as a refill, contain a sig suggestive of prophylaxis for a procedure, unavailable tracking information. The development and implementation of an intervention will be determined. A post-intervention data analysis will assess the effectiveness in reducing time-to-prescription receipt. This process improvement project will not require institutional review board (IRB) approval.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-126

Poster Title: Design and implementation of a 24-hour ambulatory blood pressure monitoring (ABPM) service at a veterans affairs medical center

Primary Author: Norman Hooten, Orlando Veterans Affairs Medical Center, FL; **Email:** norman.hooten@va.gov

Additional Author (s):
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Purpose: Current clinic blood pressure measurement techniques are insufficient in the diagnosis and management of hypertension. 24-hour ABPM is endorsed by several organizations and considered the gold standard in evaluating blood pressure. Implementation of 24-hour ABPM, pharmacist-managed service will enable clinicians to refer appropriately selected, ambulatory patients who will likely benefit from a more accurate assessment of blood pressure, guiding optimization or reduction of anti-hypertensive therapy. This strategy can potentially improve clinical outcomes and provide cost-savings associated with the management of hypertension.

Methods: The objective of this project is to establish a pharmacist-managed, 24-hour ABMP clinic at the medical center. This will include creation of a business plan including recommendation for selection of the 24-hour ABPM device. The ABPM clinic will be a consult service independently managed by the cardiology clinical pharmacy specialist (CPS). The consult will initially be limited to referral by providers within the cardiology service. Candidates for the 24-hour ABPM service will include patients with suspected white coat hypertension or white coat effect and suspected nocturnal hypertension, with potential for expansion to other indications in the future. Patient specific ABPM results will be evaluated by the cardiology CPS, recommendations will be reviewed with a cardiologist, and interventions will be implemented via shared decision making with the patient and referring provider. The service business proposal will be presented to pharmacy administration and chief of cardiology for approval and concurrence.

Results: Pending

Conclusion: Pending

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-127

Poster Title: Process improvement regarding outpatient prescribing practices in Veterans with myasthenia gravis within a multi-campus Veterans Affairs Medical Center

Primary Author: Justin Dorotheo, Orlando Veterans Affairs Medical Center (OVAMC), FL; **Email:** justin.dorotheo@va.gov

Additional Author (s):
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Purpose: The results of a previous medication use evaluation (MUE) indicate prescribing of potentially inappropriate medications (PIMs) occurs in Veterans with myasthenia gravis (MG) without documented acknowledgement of risk or plan for closer monitoring. The objective of this process improvement (PI) project is to determine if increased awareness by prescriber or pharmacist will be recorded in the electronic medical chart after implementation of a clinical reminder order check (CROC).

Methods: A CROC will be developed and implemented to alert both prescriber and pharmacist when a PIM is ordered in a Veteran identified with MG. PIM severity will be pre-determined based on recommendations published by the Myasthenia Gravis Foundation of America (MGFA). Data collected will include: patient's name, number of CROCs triggered, PIM and directions, prescriber and pharmacist acknowledging the CROC, presence of an intervention, source of documented intervention, and prescriber practice area. The primary outcome will be the percent of documented interventions. Data collected from a previous and related MUE will be compared and analyzed to identify changes in prescribing practices of PIMs in patients with MG before and after implementation of the CROC.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-128

Poster Title: Assessment of outcomes following opioid tapering in a veterans healthcare system

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Additional Author (s):
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Purpose: The purpose of this study is to describe and assess the impact of high dose opioid therapy tapers in veterans with chronic non-cancer pain completed within the North Florida/South Georgia Veterans Healthcare System (NF/SG VHS) prompted by the initiation of the Opioid Safety Initiative (OSI) in 2013. The ultimate goal is to determine whether expanding the role of a clinical pain pharmacist in assisting with opioid tapers is warranted to improve patient outcomes, safety, and quality of life, i.e. by providing medication management recommendations.

Methods: This will be a single center, retrospective, observational chart review conducted at the NF/SG VHS. The VA corporate data warehouse and computerized patient record system will be used to identify patients on 300mg morphine equivalents per day (MED) or greater as of January 1, 2012 who are identified as having opioid therapy tapered based on decreasing MED and an opioid agreement discontinuation note documented in the chart. Veterans treated for cancer pain or under palliative care will be excluded. Descriptive outcomes regarding the tapering of opioids will include the average duration of taper, rate of relapse, duration of abstinence, percentage of patients who seek non-VA health care, percentage of patients lost to follow-up, number of referrals to substance abuse treatment and/or pain specialty services, number of naloxone prescriptions, and number of buprenorphine prescriptions. Patient outcomes will include suicide attempts and mortality rate including death due to drug overdose. Differences in the year prior to tapering compared to the year following discontinuation of opioid therapy will be determined, including the average number of emergency room visits, primary care visits, hospitalizations, urine drug tests, prescription drug monitoring program queries, patient weight, number of non-opioid pain medications per

patient, number of benzodiazepine prescriptions, and number of complementary and alternative medicine modalities utilized before and after tapering.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 1-129

Poster Title: Analysis of proton pump inhibitor utilization to promote patient safety and cost avoidance within the medical center

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Additional Author (s):
Tina Cha

Purpose: Proton pump inhibitors (PPIs) are prescribed for stress ulcer prophylaxis but often not discontinued when the patient is discharged from the hospital. Without appropriate indications, there is unnecessary exposure to health risks and increased costs for the facility. The objective of this project is to assess the frequency of patients being discharged on a PPI after hospitalization as well as the appropriateness of indications for prescribing. Additionally, choice of PPI will be evaluated to ensure fulfilling of criteria for use at this facility as well as an analysis of potential cost avoidance.

Methods: A retrospective medical record review of approximately 100 patients discharged with PPIs over the past 12 months will be conducted to assess for indication at the medical center. Data collected will include demographics such as age and gender and will focus on length of PPI use, indication, and outpatient usage post-discharge. An analysis of potential cost avoidance will be conducted.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-130

Poster Title: Assessment of medication use in bipolar disorder

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Additional Author (s):
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Purpose: The objective of this project is to summarize prescribing habits with mood stabilizers and second generation antipsychotic (SGA)s in patients with a bipolar disorder (BD) diagnosis at this Veterans Affairs Medical Center (VAMC). The secondary objective is to identify potential reasons why these medications would not be prescribed. Based on results, proposals of ways to aid or remind prescribers that these medications are recommended in BD will be proposed.

Methods: This project was approved by the VAMC Scientific Advisory Committee. The evaluable population will be selected from the Veterans Health Administration (VHA) quarterly Psychotropic Drug Safety Initiative (PDSI) dashboard report that includes patients with a BD diagnosis but no mood stabilizer or SGA prescribed for fiscal year 16, quarter 3 at this VAMC. This number will be divided by the total population of BD patients, including those that are prescribed a mood stabilizer or SGA. Approximately 400 patients are expected to be identified that are not prescribed the above medications. Twenty-five percent of this population, or a maximum of 100 patients, will be included for review by systematically selecting every nth patient based on the total number. Patient demographics will be collected from the Computerized Patient Record System (CPRS) along with length of diagnosis, types and durations of past treatments, documented adverse reactions to these medications, concomitant psychiatric disorders, appointment attendance, treatments for BD, and BD hospitalizations. These data will be used to identify potential reasons that these medications are not prescribed so that an effective intervention can be proposed. Data will be analyzed by descriptive statistics.

Results: Pending

Conclusion: Pending

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-131

Poster Title: Characterizing antipsychotic compliance barriers in Veterans diagnosed with schizophrenia or schizoaffective disorder

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Purpose: Schizophrenia and schizoaffective disorder are chronic and severe mental health conditions characterized by psychotic symptoms and mood disorders that interfere with patients' overall functioning. First generation antipsychotics and second generation antipsychotics are used in the treatment of schizophrenia and schizoaffective disorder; however, patients face constant challenges in managing their condition due to non-compliance with medications. The purpose of this retrospective review is to assess patients with schizophrenia or schizoaffective disorder and characterize reasons for antipsychotic non-compliance among the Veteran population. In addition, provide information to health care professionals on how to improve medication compliance in these patient population.

Methods: A report of actionable patients is routinely generated through the Psychotropic Drug Safety Initiative for low medication compliance, defined as an antipsychotic medication possession ratio less than 80 percent in Veterans with schizophrenia and schizoaffective disorder. Patients will be selected from fiscal year 16 report, quarter 3. Patients with a primary diagnosis of schizophrenia or schizoaffective disorder who receive medical care at the medical center and have a prescription for a first generation or second generation antipsychotic will be included. A retrospective medical record review will be performed to identify barriers for non-compliance (e.g., inaccurate diagnosis of schizophrenia or schizoaffective disorder, lack of follow-up appointment, lack of medication refills, comorbid mental health condition, hospitalizations within the 6 months, substance abuse history within the last 6 months, medication compliance percentage determined by the dashboard, and antipsychotic discontinuation due to side effects).

Results: Pending

Conclusion: Pending

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-132

Poster Title: Frequency of polypharmacy and potentially inappropriate medications in blind geriatric Veterans

Primary Author: Marina Ishak, West Palm Beach VA Medical Center, FL; **Email:** marinaeishak@gmail.com

Additional Author (s):
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Purpose: Visually impaired Veterans who enroll into blind rehab centers throughout the country are at an increased risk of polypharmacy and inappropriate prescribing. Polypharmacy is defined as 5 or more medications. Potentially inappropriate medications (PIMs) can contribute to polypharmacy. There is currently a paucity of data on the harms associated with polypharmacy and PIMs in blind Veterans. The primary objective of this quality improvement project is to describe the frequency of PIMs and polypharmacy amongst visually impaired Veterans. The secondary objective is to characterize blind Veteran co-morbidities and determine if they correlate with frequency of PIMs to improve inappropriate prescribing practices.

Methods: A retrospective chart review will be conducted involving patients who were admitted to the blind rehab center during July 1, 2015 through July 1, 2016. Exclusion criteria will be defined as patients less than 65 years of age and patient admissions that were repeated throughout the year. Inclusion criteria will be defined as Veterans 65 years old or greater and will only include first admission to the blind rehab unit. For patients admitted more than once, only the initial admission will be reviewed. Data collection will include age, ethnicity, gender, cause of blindness, number of patients requiring transfer to higher level of care, classification of drug related problems, total number of medications, co-morbid disease states, and inappropriate duration of therapy. PharmD resident will complete medical record review, cataloging type of drug related problems such as therapeutic duplications, omission of medications, and medications without an indication. Descriptive statistics will be used.

Results: Pending

Conclusion: Pending

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-133

Poster Title: Assessing the impact of inpatient hospice pharmacist interventions at a Veterans Affair medical center

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Additional Author (s):
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Abigail Brooks
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Purpose: The primary objective of this project is to characterize inpatient hospice pharmacists' interventions and evaluate cost-savings associated with these interventions. The secondary objectives are to assess the validity and applicability of the Pharmacists Achieve Results with Medications Documentation (PhARMD) tool in the hospice setting and determine physician offloading time associated with pharmacist interventions.

Methods: This project has been approved by the Scientific Advisory Committee as part of the facility's ongoing performance improvement efforts. At the West Palm Beach VA Medical Center (WPB VAMC), the Pharmacists Achieve Results with Medications Documentation (PhARMD) tool provides the ability to document and track pharmacist interventions in various settings. The PhARMD tool will be used to identify interventions made by inpatient hospice pharmacists between August 1, 2016 and November 30, 2016. Through retrospective review of clinical notes in the computerized patient record system (CPRS), each intervention will be reviewed to record patient age, gender, reason for visit, disease state or symptom for intervention, and intervention type. Examples of intervention types include: dose adjustments, initiation of new therapies, and discontinuation of existing medications. Before the aforementioned data are collected, a quality assurance evaluation will be conducted to assess the accuracy of documentation with the PhARMD tool by the pharmacists working in the hospice unit. A random sample of at least 10 documented interventions per pharmacist from the WPB VAMC inpatient hospice unit between July 15, 2016 and July 30, 2016 will be reviewed. Cost savings based on interventions will be calculated using published estimations of

cost avoidance associated with various intervention types. Physician offloading times will be determined using documented times spent per intervention. Data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-134

Poster Title: Implementation and evaluation of Parkinson's disease management in an outpatient telephone clinical pharmacy specialist neurology clinic

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Purpose: Parkinson's disease (PD) is a progressive, debilitating neurodegenerative disease that often requires complex pharmacologic treatment regimens and interventions from a multidisciplinary team. To date, there is no involvement of a clinical pharmacy specialist (CPS) in the outpatient neurology clinic at our Veteran's Affairs (VA) medical center. The objective of this project is to develop an outpatient neurology telephone clinic and evaluate pharmacologic and non-pharmacologic interventions in an effort to improve quality of care for Parkinson's disease patients.

Methods: Patients who have a diagnosis of PD and have been assessed by a neurologist at our VA medical center will be enrolled into the Pharm Neurology Phone clinic via consult from neurology, primary care or speech pathology providers. The clinic will be piloted between January 6, 2017 through March 31, 2017. During the outpatient telephone clinic visit, patients will have their PD medications and neuropsychiatric non-motor complications from PD managed by a CPS in lieu of a face -to -face visit. At the conclusion of clinic time on March 31, 2017, providers will receive a satisfaction questionnaire. The following data will be collected: patient demographics, social history, assessment for the presence of non-motor complications and number of pharmacologic and non-pharmacologic interventions made. Data will be recorded without patient identifiers and maintained in a confidential and secured electronic file. The CPS will conduct medication education groups to patients with PD and their caregivers with the purpose of promoting patient knowledge and medication awareness. At the conclusion of each PD medication group, patients will receive an anonymous patient's satisfaction questionnaire. This project was approved by the facility scientific advisory committee. IRB approval was not required.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-135

Poster Title: Glycemic control in diabetics after successful hepatitis c (HCV) eradication

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Purpose: There have been multiple associations between the treatment of hepatitis C (HCV) and improvement in extra-hepatic outcomes including reductions in end-stage renal disease, ischemic stroke, and acute coronary syndrome. Hepatitis C infection has been associated with an increase in insulin resistance and the development of type 2 diabetes, and successful treatment of hepatitis C is associated with improvement in fasting plasma glucose. The objective of this study is to quantify the change in glycemic control after successful HCV treatment with subgroups evaluating the impact from cirrhosis and human immunodeficiency virus (HIV).

Methods: This study will be submitted to the Institutional Review Board for approval to be conducted as a retrospective cohort review. Patients will be selected based on successful HCV treatment and being a type 2 diabetic. Data will be collected on those patients to judge outcomes of interest including the primary outcome which is changes in glycosylated hemoglobin (HA1C) from before to after treatment. Baseline data will also include patient demographics as well as baseline labs including HCV genotype, direct-acting antiviral regimen chosen, post-treatment viral load, cirrhosis as measured by Child-Pugh score, HIV status, any antiretroviral therapy patient is on, diabetic status, and if patient is on insulin or any oral hypoglycemic agents. We will exclude patients on systemic steroids longer than one month during the three months before until three months after direct-acting antiviral therapy. Also excluded will be patients on tacrolimus, cyclosporine, sirolimus, or interferon-alpha. Paired t-tests will be utilized to assess if successful hepatitis C treatment decreased HA1C from before

treatment baseline to after treatment. All data will be collected and patient identifiers will be removed to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-136

Poster Title: Assessment of vancomycin trough concentrations compared to AUC/MIC as a predictor of efficacy for documented MRSA infections within the Atlanta VA Medical Center (AVAMC)

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Purpose: In 2009, the Infectious Disease Society of America released their recommendations on improving vancomycin surveillance which acknowledged the benefit of achieving an area under the concentration-time curve to minimum inhibitor concentration (AUC/MIC) of greater than or equal to 400. The primary objective of this study is to evaluate how frequently patients on vancomycin with a methicillin resistant Staphylococcus aureus (MRSA) infection are achieving the AUC/MIC goal of greater than or equal to 400 and to determine if higher goals of vancomycin troughs correlate more with an AUC/MIC greater than or equal to 400.

Methods: This study will be submitted to the Institutional Review Board for approval. Using the electronic medical record to identify patients, this will be a retrospective chart review of patients who were started on vancomycin for a documented MRSA infection who achieved a steady state random or trough level. The following data will be collected: patient age, gender, infectious diagnosis, minimum inhibitor concentration (MIC) of the organism, prescribed dose of vancomycin, dosing interval, vancomycin trough levels, vancomycin random levels, vancomycin administration times, vancomycin duration, serum creatinine (SCr) at baseline and at steady state, height, weight, length of stay, number of comorbidities, adverse events related to vancomycin, and vancomycin medication failures. AUC will be calculated based on trough level, or calculated true trough level if a random level was drawn, which will be defined as a level drawn no earlier than prior to the 4th dose. All data will be recorded using a de-identified number to avoid the use of patient identifiers with the key maintained on a password encrypted drive. The data will be analyzed to determine how often the target attainment of AUC/MIC greater than or equal to 400 is achieved and stratified into trough level groups of less than 10 mg/dL, 10 to 14.9 mg/dL, 15 to 20 mg/dL, and greater than 20 mg/dL.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-137

Poster Title: Assessment of antibiotic prescribing practices for acute respiratory infections in the primary care setting within the Atlanta VA Medical Center

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Purpose: The aim of this study is to determine if provider education regarding minimizing antibiotic use for acute respiratory infections (ARIs) will impact the issuance of antibiotics across the Atlanta VA Medical Center's (AVAMC) hospital-based primary care clinics, community based outpatient clinics (CBOC), and emergency department (ED) and to assess the appropriateness of agents prescribed for ARIs.

Methods: This study will be a retrospective chart review of AVAMC patients seen in a primary care clinic, CBOC, or ED and diagnosed with an ARI. Adult outpatients > 18 years of age seen in an AVAMC based primary care clinic, CBOC, or ED and diagnosed with ARI will be included. Patients with concurrent infectious processes or comorbid conditions placing them at high risk for serious bacterial infection will be excluded.
A report will be obtained from the AVAMC Clinical Applications Coordination department to include all primary care patients with International Classification of Disease, Tenth Revision, Clinical Modification (ICD-10-CM) codes indicative of ARI's between October 1, 2016 and January 31, 2017. Once this list is generated patients will first be divided based on the locations that did or did not receive education, then further divided into those who were prescribed an antibiotic and those who were not.
A retrospective chart review of CPRS® will be completed for all patients included in the study. Information recorded will include patient age, gender, location of the visit, type of provider seen, presence of clinical features of infection such as temperature greater than 100.4°F (38°C) and positive rapid antigen detection test (RADT) for suspected pharyngitis, specific diagnosis, and type of antibiotic prescribed. The results will be compared to a previously conducted retrospective chart review from 2014 of similar AVAMC patients.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-138

Poster Title: Implementation of an osteoporosis risk-assessment template to improve the prevention of osteoporosis-related fractures in community living centers at the Carl Vinson Veterans Affairs Medical Center

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Purpose: One out of five men will have an osteoporosis-related fracture in their life-time. By ensuring that proper prevention therapy is implemented, we can continue to provide exceptional health care at the Carl Vinson Veterans Affairs Medical Center. The purpose of this project is to implement a risk-assessment template to improve the prevention of osteoporosis-related fractures and initiate calcium and vitamin D supplementation for high risk Veterans.

Methods: Prior to the implementation of an osteoporosis risk assessment template, Veterans in community living centers (CLCs) at the Carl Vinson VAMC will be evaluated. A thorough chart review will be performed and the following data will be collected: age, weight, previous fracture as an adult or history of hip fracture, race, current tobacco use, baseline serum vitamin D and calcium levels, current alcohol intake, history of rheumatoid arthritis, risk of falls, and current medications that may increase the risk of osteoporosis. This information will be used to determine the number of Veterans at risk for an osteoporosis-related fracture and the number of those on proper prevention therapy. The template will be created to facilitate documentation and to recommend prevention therapy if appropriate. A comparison will be made between the number of Veterans on preventative therapy before and after template implementation.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-139

Poster Title: Establishing an opioid overdose education and naloxone distribution (OEND) shared medical appointment at the Carl Vinson Veterans Affiars Medical Center

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Purpose: According to Centers for Disease Control and Prevention, more than 260 million opioid prescriptions are filled yearly in the United States. In 2014, more than 19,000 deaths were attributed to overdose involving prescription opioids. Veterans are considered to be twice as likely to experience a fatal accidental overdose compared to non-veterans according to a 2011 study of Veteran patients. Through opioid overdose education and naloxone distribution, the goal of this projects is to ensure that high risk Veterans have access to lifesaving naloxone in the event of an overdose situation.

Methods: Prior to implementation of a shared medical appointment (SMA), a screening tool utilizing opioid overdose risk factors will be used to identify Veterans at high risk for overdose. A Veteran will be considered “high risk” if they meet one or more of the following criteria: a Risk Index for Overdose or Serious Opioid-induced Respiratory Depression (RIOSORD) risk class greater than or equal to two; opioid therapy with concomitant benzodiazepine therapy; multiple, as needed, opioid medications; or a positive urine drug screen for illicit opioids. Once Veterans are screened, those identified at high risk will be scheduled for a shared medical appointment that will provide opioid overdose education by an interdisciplinary team and naloxone distribution. The shared medical appointment will focus on identifying risk factors for opioid overdose, naloxone education, naloxone kit training, and prescribing a naloxone to participating Veterans. After implementation, additional data will be collected to determine if

the shared medical appointment increased the number of naloxone kits provided to Veterans at high risk for opioid overdose.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 1-140

Poster Title: Prescribing patterns of stimulant medications at the Iowa City Veterans Affairs Health Care System

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Purpose: A recent review of the literature reported a trend of increased stimulant medication prescribing nationally. In this review, it was noted that total stimulant prescription sales in adults have surpassed those for youth. Off-label use is reported to be approximately 33% of total use and appears to be more common in adults. Additionally, stimulants have the potential to cause or exacerbate anxiety, insomnia, and/or hypertension. This retrospective chart review will help determine if there is a need for pharmacy-focused efforts to optimize stimulant use.

Methods: This project was designed as a quality improvement project to be conducted by retrospective chart review. Veterans within the Iowa City Veterans Affairs Health Care System (ICVAHCS) prescribed a stimulant medication from April 18, 2016 through July 18, 2016 were reviewed. Data was collected from the local VA Computerized Patient Record System (CPRS) electronic medical record. Variables collected include: demographic characteristics, medication, dose, indication for use, prescriber, comorbid conditions, concurrent medications, and urine drug screening rates. A minimum of 50 charts were randomly reviewed to align with recommendations from the Joint Commission on the Accreditation of Healthcare Organizations based on statistical significance and sensitivity to an organization's population size. The data was compiled to show trends of prescribing, patient characteristics, appropriate drug-disease and drug-indication use, and incidence of adverse effects.

Results: Majority of patients were prescribed methylphenidate as this is one preferred agent within the ICVAHCS. Of 281 unique patients, 100 charts were reviewed revealing 11% were

prescribed a dose above the FDA recommended dose, 31% were prescribed for a non-FDA approved indication, and 31% were using another controlled substance. Nearly half (44%) were prescribed one or more agents to treat insomnia during treatment with a stimulant. Depression was a concurrent diagnosis in 69% of the patients reviewed; 40% had PTSD, 29% had an anxiety disorder, and 7% had a history of substance use disorder. Of 38 patients in the sample with a previous diagnosis of hypertension, 32% (12 patients) had uncontrolled hypertension. History of cardiac disease was found in 5% of patients and heart failure was found in 2% of patients.

Conclusion: Results are similar to previously published literature and suggest a high use of stimulants for non-FDA approved indications. Almost half of the patients prescribed a stimulant had comorbid insomnia which required treatment. Additionally, almost 30% of patients had concurrent diagnosis of anxiety which may be worsened by stimulant use. Polypharmacy resulting from the management of side effects may be avoided in a subset of patients prescribed stimulants. Strategies to improve safety and monitoring with stimulant treatment are warranted. Overall, use of stimulants could be optimized by pharmacy intervention at the ICVAHCS by targeted educational efforts regarding appropriate prescribing and utilization.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-141

Poster Title: Effectiveness of a pharmacist-driven academic detailing program on appropriate antibiotic use in outpatient urinary tract infections

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Additional Author (s):
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Purpose: Antimicrobial stewardship teams tackle appropriate prescribing of antibiotics. These teams are often well established in the acute care setting with fewer strategies developed for outpatient clinics. Academic detailing, a method that has been successfully used in the VA for mental health initiatives, may be used to bridge this gap. A recent medication use evaluation demonstrated an opportunity to improve inpatient urinary tract infection treatment. It is speculated this need is also present in the outpatient arena. In this pilot project, pharmacist-driven academic detailing will be used to provide targeted evidence-based information on urinary tract infection treatment to outpatient providers.

Methods: This quality improvement project is exempt from Institutional Review Board review. It will be reviewed by the Chief of Pharmacy, Chief of Staff and Pharmacy and Therapeutics Committee. In this pilot project, clinics will be selected based on the number of prescriptions written for urinary tract infections in one year. Clinics with the highest volume of prescribing will be included in this pilot. Providers in selected clinics will receive one-on-one academic detailing visits regarding antibiotic use in urinary tract infections. These visits will be conducted by the pharmacy resident and/or an academic detailing-trained clinical pharmacist. Optimal antibiotic selection, duration of treatment and omission of treatment in asymptomatic bacteriuria will be discussed during the visit. Educational material including evidence-based treatment guidelines and the facility's antibiogram will be presented to each provider. The visit will also allow for open discussion of barriers to optimal urinary tract infection management and how those barriers can be resolved. Data on antibiotic use will be collected before and after academic detailing visits. The primary outcome assessed will be the change in antibiotic prescribing consistent with current practice guidelines. Secondary outcomes will be change in

number of fluoroquinolones prescribed, a composite of barriers/resolutions to appropriate antibiotic selection, and time required for each academic detailing visit.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-142

Poster Title: Implementation of the Veterans Health Administration's Hypoglycemia Safety Initiative at a local community based outpatient clinic: A focus on patient safety

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Purpose: In effort to address aggressive blood glucose targets in high risk diabetes patients, the Veterans Health Administration has implemented an optional, nationwide Hypoglycemia Safety Initiative. This initiative targets patients at high risk for hypoglycemic episodes. High risk is defined as an A1c less than 7%, insulin or sulfonylurea use, and an additional risk factor(s): 75 years or older, dementia or cognitive impairment, or serum creatinine greater than 1.7 mg/dL. The objective of this project is to implement fundamentals of this initiative at a community based outpatient clinic to assist in the management of patients at high risk for hypoglycemia.

Methods: This quality improvement project will be reviewed and approved by the Chief of Staff, Chief of Pharmacy, and Pharmacy and Therapeutics Committee. Providers will be educated on the Hypoglycemia Safety Initiative through an academic detailing approach involving a pharmacist-led discussion on the initiative. Provider-specific information on their patients that fall into the high risk category will be provided. Pharmacists will request permission from providers to assist in the effort to improve patient care. With provider support, a pharmacist will complete chart reviews and patient interviews to discuss and evaluate current diabetes management. Chart reviews will focus on documentation of hypoglycemic events, hemoglobin A1c trends, and diabetes medication regimens. Patients will be interviewed by telephone to assess hypoglycemic event occurrence and to discuss current diabetes therapy. Education on the signs and symptoms of hypoglycemia and appropriate medication use will also be addressed in patient interviews. The primary outcome will be the occurrence of a hypoglycemic event(s) prior to and post pharmacist intervention. Secondary outcomes include recommendations accepted by provider, patient referral to the Patient Aligned Care Team (PACT) pharmacist clinic, and change in high risk status or hemoglobin A1c goal. Additional

secondary outcomes include the evaluation of glucagon and glucose tablet prescribing, cost savings for the patient and facility, and time dedicated to each patient.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-143

Poster Title: Evaluation of prescriber compliance with metabolic monitoring guidelines in patients treated with second-generation antipsychotics

Primary Author: Shelby White, Boise VA Medical Center, ID; **Email:** shelby.white@va.gov

Additional Author (s):

Purpose: Second-generation antipsychotics (SGAs) have a well-known association with unfavorable changes in metabolic parameters. Guidelines recommend regular metabolic monitoring after initiation of any medication in this class. The primary objective of this study is to determine the rate of provider compliance with metabolic monitoring guidelines for patients who are prescribed an SGA. A secondary objective is to determine the proportion of patients being monitored on SGAs stratified by provider type, indication for use, patient demographics, and whether the monitoring was done at baseline or 12 weeks.

Methods: The Computerized Patient Record System (CPRS) will be utilized to conduct a retrospective chart review of 100 profiles of patients who have been prescribed a second-generation antipsychotic before the date of September 30, 2016. Patients will be selected from the most recent prescription of an SGA and reviewed in reverse chronological order until the aforementioned sample size is achieved. Lab monitoring data will be assessed and compared to 2004 consensus treatment guidelines. This will start on the date the SGA was prescribed until a follow-up endpoint of 12 weeks. Patients will be included in this evaluation if an SGA was prescribed for them by a VA provider during the retrospective study period, and they received the medication for at least 12 consecutive weeks. Patients will be excluded from this evaluation if they were previously prescribed an antipsychotic medication (first generation or second generation) at any time in the past as determined by outpatient fill history. They will also be excluded if their medication was prescribed outside the VA healthcare system. Data will be collected on dates fasting lipid panel and HbA1C or fasting plasma glucose were ordered to assess compliance with guidelines at baseline and 12 weeks after initiation of the SGA. Descriptive statistics will be used to assess rates of prescriber compliance.

Results: n/a

Conclusion: n/a

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 1-144

Poster Title: Evaluation of decentralized hours for discharge pharmacist at Boise VA Medical Center

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Purpose: xxx

Methods: xxx

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-145

Poster Title: Evaluation of broad-spectrum antimicrobial utilization for community-onset pneumonia in patients treated at the Boise Veterans Affairs Medical Center

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Purpose: The health care associated pneumonia (HCAP) guidelines for use of broad-spectrum antimicrobials are no longer valid. The objective of this evaluation is to investigate the use of broad-spectrum antimicrobials in the treatment of community-onset pneumonia at the Boise Veterans Affairs Medical Center (BVAMC). This evaluation will determine the effectiveness of the recently implemented community-onset pneumonia order set menus, compare the prescribing rates of broad-spectrum antimicrobials for between the emergency department and inpatient settings, and compare the predictive performance of the Drug Resistance in Pneumonia (DRIP) Score to the new order set menus in identifying drug-resistant pathogens.

Methods: This evaluation will consist of a retrospective analysis of patients who presented to the BVAMC emergency department or were admitted to the BVAMC with a diagnosis of community-onset pneumonia. The retrospective review of medical records will compare data between two time periods: twelve months prior to and six months after implementation of the new order set menus. Pertinent data collected will include patient demographics, patient risk factors for drug-resistant pathogen pneumonia, antimicrobial use, and microbiology reports. Patients included in the evaluation must be admitted to the Boise VAMC within 48 hours of presentation, have a documented admitting diagnosis of community-onset pneumonia, and received at least one dose of an antimicrobial in the emergency department or hospital. Patients will be excluded from the evaluation if they present with multiple infections requiring broad-spectrum antimicrobials, hospital-acquired pneumonia (HAP), ventilator-associated pneumonia (VAP), or if transferred from an outside hospital with pneumonia. Primary endpoints will include a comparison of the mean percentage of patients administered broad-spectrum antibiotics before and after order set menu implementation, the percentage of patients receiving discordant antibiotics between the emergency department and inpatient

setting, and a comparison of predictive performance in identifying drug-resistant pathogens between the DRIP score and new order set menus.

Results: N/A

Conclusion: N/A

Submission Category: Leadership

Submission Type: Descriptive Report

Session-Board Number: 1-146

Poster Title: Two-year outcomes of a pharmacy resident-facilitated leadership and advocacy elective for professional pharmacy students

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Purpose: Current accreditation standards for colleges of pharmacy emphasize the need for curriculum intended to promote student leadership and advocacy. To meet these standards, local pharmacy residents designed, implemented, and assessed a pilot leadership and advocacy course at Idaho State University-College of Pharmacy one year ago. The course continued this year as a resident-facilitated offering for second-year professional pharmacy students. With each seminar, residents pair with a non-resident healthcare leader to discuss various leadership- and advocacy-related topics. As such, the elective was designed to meet accreditation standards and increase teaching opportunities for local pharmacy residents interested in leadership, management, and/or academia.

Methods: For both years, course assessment was completed through anonymous written and electronic surveys. Students completed pre- and post-surveys about their leadership abilities/beliefs at the beginning and end of each semester, respectively. Students were also assessed regarding the perceived quality and utility of each seminar and required project throughout the semester. Finally, an additional survey was sent to participating residents and non-resident healthcare leaders to garner general, qualitative feedback. Survey results were analyzed utilizing descriptive statistics.

Results: Across both years during which the course was offered, there were 15 residents who taught over 20 lectures, four resident facilitators, and approximately 15 non-resident healthcare leaders who contributed to the elective. Survey data revealed that all students

strongly agreed the course was valuable in developing their leadership skills. Self-perceived improvement was reported through greater understanding of effective leadership and self-awareness of strengths. Student assessments of the quality and utility of each seminar topic and project are presented. Residents and non-resident healthcare leaders consistently reported that they would participate again if given the opportunity.

Conclusion: The pharmacy resident-facilitated leadership and advocacy elective simultaneously facilitated resident teaching and improved students' engagement in leadership and advocacy. Strengths of this course include a) the use of pharmacy residents to facilitate an elective that meets accreditation standards, b) the provision of teaching and networking opportunities to students and residents, and c) improved understanding of the importance of leadership and advocacy among professional pharmacy students. Limitations of this course include small class size, time-intensive input from facilitators, and incomplete survey participation.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-147

Poster Title: Implementation of a pharmacist-managed hepatitis c clinic in the rural primary care setting

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Purpose: Novel oral direct-acting antiviral agents for hepatitis C virus have substantially improved patient outcomes by increasing cure rates, patient adherence, and tolerance. In a geographical location with limited local access to medical specialties for management of hepatitis C, a unique opportunity exists for pharmacists to provide hepatitis C treatment services. This project aims to provide comprehensive medication management for hepatitis C by a pharmacist in a rural primary care setting. Treatment outcomes and viral response will be documented. Also patient satisfaction, adherence to medication and appointment attendance information will be collected and analyzed.

Methods: This prospective quality improvement project will be performed including all patients referred to pharmacists for hepatitis C treatment from the clinic's implementation on September 1, 2016 through the completion of each patient's treatment. Pertinent baseline information will be obtained from electronic medical records and will include patient demographic information, liver disease characteristics, treatment history, and laboratory results. Patients will meet with pharmacists (who will be the primary treatment clinician) in 28 day increments for initial education of hepatitis C treatment and ongoing assessment of tolerance, adherence, medication reconciliation, and laboratory monitoring. In addition to treatment outcomes and viral response, this study will also collect a survey to assess patient satisfaction of pharmaceutical care provided by the pharmacists throughout the duration of their hepatitis C treatment.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-148

Poster Title: Evaluation of a team-based approach to control blood pressure using home-monitoring technology in Veterans with hypertension

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Purpose: Given the rapidly evolving technology and the emphasis to provide patient-centered care, Captain James A. Lovell Federal Health Care Center (FHCC) utilizes a team-based approach among providers, nurses and pharmacists as an effort to improve blood pressure control using home tele-monitoring technology. The purpose of this study is to describe the process of implementing a team-based approach protocol, and to evaluate the summative findings in Veterans enrolled in the Veterans with Hypertension Home Telehealth Program (VHHTP). The primary objective of this study is to describe the process of VHHTP, and evaluate the factors needed to sustain the program over time.

Methods: This study is a retrospective cohort study evaluating the demographic changes in Veterans participating in VHHTP. Descriptive statistics will be used to evaluate the protocol process using averages and percentages. Secondary outcomes will be analyzed using paired T-tests to assess for statistical significance, using an alpha level less than 0.05.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-149

Poster Title: Evaluating rates of metabolic monitoring for second generation antipsychotics after implementation of a new pop-up alert

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Purpose: Second generation antipsychotics (SGAs) are commonly prescribed for psychiatric conditions. Although there are many advantages over first generation antipsychotics, SGAs are known to cause metabolic side effects including diabetes, obesity, dyslipidemia, and metabolic syndrome. Because of these adverse effects, the American Diabetes Association, the American Psychiatric Association, the American Association of Clinical Endocrinologists, and the North American Association for the Study of Obesity developed consensus statement monitoring guidelines in 2004. The aim of this study is to evaluate the rate of metabolic monitoring at baseline and twelve weeks for newly prescribed SGAs after implementation of a new pop-up alert.

Methods: This study is a retrospective cohort study comparing two groups of veterans at the Captain James A. Lovell Federal Health Care Center: those newly prescribed a SGA prior to when the pop-up was implemented and those newly prescribed an SGA after the pop-up was implemented. The time frame for retrospective chart review will be May 1, 2015 to December 15, 2015 for metabolic monitoring rates prior to the pop-up alert, and May 1, 2016 to December 15, 2016 for metabolic monitoring rates after implementation of the pop-up alert. Those included in the study will be veterans at the Captain James A. Lovell Federal Health Care Center who are at least 18 years old and are newly prescribed an SGA within the time periods listed above. Any patient prescribed an SGA for less than 90 days or “as needed” will be excluded. The following data will be collected: patient age, gender, inpatient or outpatient status, SGA name, psychiatric diagnosis, date of original prescription, type of provider ordering baseline and twelve week labs, whether or not baseline and twelve week labs were monitored, and type of interventions made, if any. The Chi-squared test will be used to compare the two

cohorts, as well as compare the rates of inpatient metabolic monitoring and outpatient metabolic monitoring. A p-value of less than 0.05 will be considered significant.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-150

Poster Title: Association of chronic proton pump inhibitor therapy and anemia

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Purpose: Proton pump inhibitors are commonly used in the treatment of a variety of gastrointestinal disorders and cause few adverse effects with short-term use. However, long-term use has been scrutinized for appropriate duration of use and the potential for adverse effects. Proton pump inhibitors suppress gastric acid and may decrease iron absorption. Without adequate iron concentrations, hemoglobin will not be properly produced. Thereby, decreasing hemoglobin levels and potentially leading to the development of microcytic, hypochromic anemia over the long term. The objective of this study is to evaluate the relationship between proton pump inhibitor use and iron deficiency anemia.

Methods: This study is a retrospective cohort study comparing three groups of patients: those that have received proton pump inhibitor therapy for less than 1 year; greater than or equal to 1 year and less than 3 years; greater than or equal to 3 years and less than 5 years. The primary outcome of this study will be changes in hemoglobin, hematocrit, mean corpuscular volume, and ferritin levels from baseline. The secondary objective is to analyze the number of patients meeting the World Health Organization's definition of anemia pre-proton pump inhibitor use versus post-proton pump inhibitor use. The following data will be collected: age, gender, past medical history, initial start date of proton pump inhibitor therapy, indication for proton pump inhibitor use, specific proton pump inhibitor and dose, complete blood counts, concurrent medications, and dates of proton pump inhibitor medication refills. If available, results of iron studies will be collected. All data will be recorded without patient identifiers and maintained confidentially. One-way ANOVA test will compare the changes in hemoglobin, hematocrit, mean corpuscular volume, and ferritin levels from baseline among the groups. Chi-square test will examine the association between proton pump inhibitor use and anemia. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-151

Poster Title: Evaluation of fenofibrate therapy in a Veteran population

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Purpose: Fibrates are characterized by their ability to lower serum triglycerides. The degree of hypertriglyceridemia warranting treatment has evolved over time. Although there is a lack of evidence showing cardiovascular benefit with fibrate utilization, the Endocrine Society's clinical practice guidelines recommend fibrates to decrease the risk of triglyceride-induced pancreatitis in at-risk patients. Due to changes in clinical practice guidelines, a retrospective medication use evaluation will be conducted to evaluate if fenofibrate use at our facility aligns with current practice guidelines.

Methods: A retrospective chart review will be conducted using the patient chart and electronic medical record. This medication use evaluation will utilize prescription data to identify patients currently prescribed fenofibrate. Data to be collected includes demographic information (patient age, gender, height, weight), serum triglycerides and serum creatinine, previous or concurrent use of fish oil, history of pancreatitis, average daily dose of fenofibrate and last fill date. Data collected will be stored in an encrypted file and saved in a secure location. The reviewers will utilize the information to either recommend to continue, discontinue, or change fenofibrate to another therapy based on current practice guidelines.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Evaluative Study

Session-Board Number: 1-152

Poster Title: Evaluation of Vaccine Errors at the Jesse Brown VA Medical Center

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Purpose: Vaccines are vital for protection against communicable diseases and have been considered one of the most significant public health achievements, preventing an astounding two to three million deaths per year worldwide. Jesse Brown VA Medical Center (JBVAMC) recognizes the importance of preventative care through vaccination. Vaccine use has increased at JBVAMC over time. With the complex administration schedules and nuances of each vaccine, it is especially important that vaccines are ordered, dispensed, administered, and documented appropriately. Therefore, the purpose of this study is to evaluate the vaccine-related errors in the facility and to propose system solutions that may reduce them.

Methods: This study will be a retrospective, electronic chart review of patients at JBVAMC that will evaluate vaccine-related errors that occurred between March 1, 2015 and August 31, 2015. The primary endpoint of the study is to evaluate the processes related to vaccine errors and to identify the root cause. Secondary endpoints include the incidence of various types of vaccine related errors and the contributing factors of these errors.

Results: One-hundred and sixty six (n=166) patient charts with a vaccine error were reviewed. Nearly 73% percent (n=121) of the patients' vaccine errors were related to documentation, 11% (n=19) related to the ordering process, 10.8% (n=18) related to the administration process, and five percent (n=8) related to the verification process. Fifty-seven percent of the vaccine errors occurred at the main facility with 76% of the errors contributed by nursing staff. The contributing factors associated with the most common errors were related to the nurses'

unfamiliarity with how to properly document vaccines and system inefficiencies that have made it difficult for providers and nurses to order and administer vaccines, respectively.

Conclusion: The study showed that majority of the vaccines errors were related to the ordering and documentation process and were likely due to system issues and a lack of standardization in education.

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-153

Poster Title: Retrospective evaluation of a pharmacist-led safety initiative to assess the appropriateness of fibrate discontinuation when used in combination with statins

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Additional Author (s):
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James Sluis
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Purpose: Due to the lack of evidence regarding the ability of fibrates to reduce mortality and the increased risk of adverse effects when combined with statins, the Veterans Affairs National Pharmacy Benefits Management Services advised medical centers to evaluate the appropriateness of statin-fibrate dual therapy. The pharmacy service at the Jesse Brown Veteran Affairs Medical Center (JBVAMC) conducted a review of patients on statin-fibrate therapy to determine the appropriateness of combination therapy. The purpose of this study was to evaluate whether the pharmacist-driven discontinuation of fibrate therapy resulted in maintenance of triglyceride levels below an acceptable threshold as supported by guidelines.

Methods: This was a retrospective, electronic chart review of outpatients taking combination statin and fibrate therapy during the pharmacist-led safety initiative. Patient data were collected from 9/28/2013 to 9/28/2015. Baseline data were the most recent labs prior to fibrate discontinuation. Endpoint data were the most recent labs completed at least 4 weeks after fibrate discontinuation. The primary endpoint was the percentage of patients with triglycerides less than 500 mg/dL prior to fibrate discontinuation compared to the percentage of patients with triglycerides less than 500 mg/dL after fibrate discontinuation. Secondary endpoints such as worsened triglycerides, fibrate re-initiation, incidence of pancreatitis and myopathy, change in statin therapy, adherence with follow-up labs, and average time to lab follow-up were evaluated. This research was approved by the institutional review board and research and development committee at JBVAMC.

Results: One-hundred and twenty-nine patients had their fibrate discontinued. A total of 116 patients were included in this retrospective analysis. Of the 13 excluded patients, 10 patients were excluded due to a lack of baseline lipid levels. Prior to fibrate discontinuation, the most common statins prescribed were simvastatin (39.7%) and atorvastatin (24.1%). Majority of patients were prescribed a moderate intensity statin (56.9%). The most common fibrate prescribed was gemfibrozil (81.9%). Eighty-four percent of patients obtained follow-up labs after fibrate therapy was discontinued. Before fibrate discontinuation, 95.9% (n=94) of patients had triglycerides less than 500 mg/dL. After fibrate discontinuation, 96.9% (n=95) of patients had triglycerides less than 500 mg/dL ($p = 1$). After fibrate discontinuation, there was a 60.7% increase in atorvastatin prescriptions. Prescribing of high intensity statin therapy also increased by 46.7%. Low-density lipoprotein (LDL) and total cholesterol were significantly reduced after discontinuation of fibrate therapy ($p < 0.001$). No patients developed pancreatitis, myopathy, or rhabdomyolysis. Four patients resumed a fibrate after follow-up; 3 patients resumed due to an increase in triglycerides. Only 2 of the 4 patients had elevations in triglycerides greater than 500 mg/dL after statin discontinuation.

Conclusion: Pharmacists, in collaboration with the healthcare team, can play an integral role in direct patient care. This pharmacist-driven safety initiative proved effective in that patients who had their fibrate discontinued maintained triglycerides below an acceptable threshold as supported by clinical guidelines.

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-154

Poster Title: Impact of vitamin D supplementation in chronic heart failure in the veteran population

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Purpose: To identify whether chronic heart failure patients supplemented with vitamin D experience clinical benefit.

Methods: The institutional review board approved this retrospective, electronic chart review of patients at Jesse Brown VA Medical Center with a diagnosis of chronic heart failure as determined by ICD-9 codes and a 25(OH)D vitamin D level drawn between August 1st, 2010 and July 31st, 2013. Exclusion criteria included serum creatinine greater than 2mg/dL and/or hemotoneal or peritoneal dialysis, hyperparathyroidism, vitamin D supplementation within 1 year prior to start of the study period, or receipt of a vitamin D supplement outside the VA medical system. Outcomes were analyzed between two study groups: those supplemented with vitamin D, and those not supplemented. The primary endpoint was a composite of heart failure exacerbations leading to hospitalization and/or mortality within two years following vitamin D supplementation compared to chronic heart failure patients not supplemented. Each component of the composite primary endpoint was also evaluated and reported as secondary endpoints. A subgroup analysis comparing patients with heart failure with preserved ejection fraction to patients with heart failure with reduced ejection fraction was completed for the primary endpoint. Subgroup analyses of primary and secondary endpoints were also completed in patients with a baseline 25(OH)D less than 20ng/mL, less than 30ng/mL, and greater than or equal to 30ng/mL. Additionally, a subgroup analysis was completed comparing supplementation with ergocalciferol only, cholecalciferol only, and a combination of the two for the primary endpoint.

Results: Thirty-two patients met inclusion criteria and were included in the study. Nineteen of the 32 patients were supplemented with vitamin D; 13 patients were not supplemented. No significant differences were identified for the primary composite endpoint, or for the secondary endpoints. Additionally, no significant differences were identified in the subgroup analyses.

Conclusion: Overall this study did not identify any clinical benefit in chronic heart failure patients supplemented with vitamin D. Thus, the benefits of vitamin D supplementation in the chronic heart failure population remain unclear. Given the significant limitations of this study, future studies remain warranted.

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-155

Poster Title: Colchicine prescribing patterns for gout prophylaxis in a VA population

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Purpose: Colchicine is an anti-mitotic medication with complex regulatory history and risk of significant toxicity. The purpose of this study was to evaluate the use of colchicine when prescribed for a duration greater than or equal to 30 days for gout prophylaxis. Appropriate use of colchicine for this duration is in combination with urate lowering therapy (ULT). Other factors that contribute to appropriate prescribing include proper dose adjustment of colchicine for renal impairment and drug-drug interactions. We suspect that there may be a high incidence of inappropriate colchicine prescribing at our facility.

Methods: This study was a retrospective, electronic chart review of patients filling colchicine prescriptions for a supply of ≥30 days from October 1, 2012 through June 30, 2014. Patients age 18 years and older who filled new (no colchicine prescription filled within prior six months) colchicine prescriptions within the designated time frame were included, and charts were followed for 15 months after initial fill of colchicine. Patients were excluded if colchicine was not for treatment of gout, if colchicine was not prescribed for daily or every-other-day dosing, and if patients were taking concomitant urate oxidase therapy. The primary endpoint was the percent of patients initiated on concomitant ULT with allopurinol, febuxostat, or probenecid within 30 days of filling the colchicine prescription. Secondary endpoints included incidence of appropriate dose adjustments, additional encounters for gout-related problems, duration of colchicine treatment, adherence rates, and monitoring of serum uric acid after initiation of ULT. Based on a previous study, it was calculated that 101 patients would be required to meet 80% power to detect a 27% rate of lack of concomitant ULT prescription. The Chi square test was

used to compare results of nominal data and the student's t-test was used to compare results of continuous data.

Results: Urate lowering therapy within 30 days of the issued colchicine prescription was prescribed for 72 out of 122 patients (59%), while ULT was not prescribed for the remaining patients. The vast majority of patients' colchicine doses were deemed appropriate per product labeling (1 patient with creatinine clearance of 29 mL/min and 1 patient with concomitant diltiazem warranted dose adjustment). For patients prescribed ULT within 30 days versus those not prescribed ULT within 30 days, use of ancillary services for gout-related problems were similar (19 encounters versus 31 encounters, p=0.24). Duration of colchicine therapy was also similar in both groups (7.9 ± 5.8 months versus 8.8 ± 5.2 months, p=0.49). Adherence rates were found to be suboptimal for colchicine and ULT. Monitoring of serum uric acid levels in patients prescribed ULT occurred in 74% of patients; however, ULT was further titrated within 3 months for uric acid >6 mg/dL only 21% of the time. Most patients did not achieve uric acid ≤6 mg/dL during the study period. For patients who achieved uric acid ≤6 mg/dL, colchicine was continued for >3 months in 36.4% of patients without tophi, which was considered to be a potentially inappropriate continuation of colchicine.

Conclusion: The majority of patients were prescribed ULT within 30 days of colchicine prescription with instructions for daily or every-other-day dosing; however, the remaining 41% of patients may have suboptimal management of gout. Reasons for these findings may include intended use of the colchicine prescription for acute flare dosing only, or lack of follow up by the patient after treatment for an acute flare. For those patients prescribed ULT, most did not achieve target serum uric acid level of ≤6 mg/dL within 15 months, thus indicating an opportunity for better optimization of gout management with ULT.

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 1-156

Poster Title: Evaluation of prescribing patterns of acetylcholinesterase inhibitors at Jesse Brown VA Medical Center

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Purpose: The American Psychiatric Association dementia treatment guidelines recommend offering acetylcholinesterase inhibitors (AChEIs) to patients with mild dementia. The AChEI 2014 Veterans Affairs (VA) Pharmacy Benefits Management Services criteria for use recommend re-evaluation within three months after initiation and then every 12 months for renewal. At the time of this study, prescribing of AChEIs was open to all providers at Jesse Brown VA Medical Center (JBVAMC), with donepezil being the preferred agent since 2011. The purpose of this study was to examine the prescribing patterns and follow-up of AChEIs for dementia treatment in general medicine clinics (GMC) compared to specialty services.

Methods: This study was a retrospective, electronic chart review of patients at JBVAMC newly initiated on AChEIs for dementia between January 1, 2012 and July 31, 2014. The primary endpoint of this study was to compare the types and timing of first follow-up for patients started on AChEIs between GMC and specialty prescribers. Secondary endpoints included evaluation of changes in cognitive function, referrals to specialty clinics and neuropsychological testing, and evaluation of adverse drug reactions.

Results: In total, 373 patient charts were randomly reviewed, of which, 136 patients were included in this study. The primary endpoint of follow-up dementia assessment within 6 months of AChEI initiation occurred in 30.2% of GMC patients versus 56.6% of specialty patients (p=0.0026). Additionally, 43.4% of patients initiated by GMC providers were assessed (either subjectively or objectively) at the first follow-up appointment, compared to 63.9% by specialty

services (p=0.019). Specialty services also had more objective assessments compared to GMC providers (20.5% and 3.8%, respectively; p=0.0061). The median time to first follow-up assessment for GMC providers was 3.48 months, as opposed to 1.83 months by specialty services. In total, 60.6% of evaluable patients had no change in cognitive function staging from AChEI initiation to time of last prescription renewal. Twelve GMC patients were referred to specialty services during the study timeframe. In addition, 45.6% of patients completed neuropsychological testing within a year of AChEI initiation. Altogether, 41.9% of patients had documentation of an ADR during the study timeframe, leading to discontinuation in 14.7% of patients.

Conclusion: At JBVAMC, specialty services had more timely and objective follow-up appointments assessing dementia after AChEI initiation compared to GMC providers.

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 1-157

Poster Title: Efficacy of vancomycin versus metronidazole for the treatment of Clostridium difficile infections in a veteran population

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Purpose: Clostridium difficile infection (CDI) accounts for 15-25% of nosocomial antibiotic-associated infections, resulting in significant morbidity and mortality. In 2010, the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America published updated guidelines for CDI. Per these guidelines, mild/moderate initial infections should be treated with oral metronidazole, while oral vancomycin is preferred for severe CDI. A recent study found higher rates of success with vancomycin, regardless of severity, providing evidence for the exclusive use of vancomycin. The purpose of this study was to compare the efficacy of vancomycin to metronidazole as CDI treatment in a veteran population.

Methods: This was a retrospective, electronic chart review of patients receiving oral metronidazole or vancomycin for the treatment of an initial CDI between January 1, 2003, and December 31, 2014. CDI was defined as a documented physician diagnosis in addition to positive laboratory testing. Clinical cure and recurrence rates were determined for all subjects. This study also evaluated clinical cure and recurrences rates in patients stratified by CDI severity. The research protocol was approved by the VA Institutional Review Board and VA Research and Development Committee.

Results: The investigators randomly selected 349 charts for review. Two hundred patients met inclusion criteria of which 152 received metronidazole and 48 received vancomycin as CDI treatment. Clinical cure occurred in 119 (78%) patients receiving metronidazole and 47 (98%) patients receiving vancomycin (p=0.002). For patients with mild disease, clinical cure was achieved in 77% of patients in the metronidazole group and 97% of patients in the vancomycin group (p=0.007). For patients with severe disease, clinical cure rates were 84% and 100% for the metronidazole and vancomycin groups, respectively (p=0.11). Recurrence occurred in 24

(16%) patients receiving metronidazole and 6 (13%) patients receiving vancomycin (p=0.58). Recurrence rates between both groups were similar when stratified by severity (p greater than 0.05).

Conclusion: Clinical cure rates were significantly higher in patients receiving treatment with vancomycin versus metronidazole, regardless of severity. Larger, randomized trials are needed to support changes to current guidelines.

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 1-158

Poster Title: Efficacy of Antimicrobials Agents in Resolving Asymptomatic Bacteriuria in Patients with Fluoroquinolone and Sulfamethoxazole-Trimethoprim Resistant Enterobacteriaceae Prior to a Planned Urologic Procedure

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Purpose: Bacteremia occurs in 25-80% of patients with untreated asymptomatic bacteriuria that are undergoing a urologic procedure with high risk for mucosal bleeding. Out of all incidences of bacteremia that occur, 10-16% progress to septicemia. Studies show that pre-procedural prophylaxis with antimicrobials is beneficial for preventing bacteremia and sepsis in these patients. Fluoroquinolones and sulfamethoxazole-trimethoprim (SMX/TMP) have been studied in this setting, however, resistance of gram-negative urinary isolates in the United States is seen in 16.4-25% and 34%, respectively. In this setting there is limited data to guide treatment options for patients with asymptomatic bacteriuria prior to urologic procedures.

Methods: The primary outcomes are to determine the efficacy of antimicrobial agents used for the eradication of urinary isolate(s) and the prevention of sepsis in subjects with a positive urine culture that displays an Enterobacteriaceae resistant to fluoroquinolones and SMX/TMP prior to a urologic procedure. This is a retrospective, electronic chart review at Jesse Brown VA Medical Center (JBVAMC). A list of subjects who had a positive urine culture resistant to fluoroquinolones and SMX/TMP between January 1, 2009 and August 17, 2015 was generated. These subjects were enrolled in two separate arms: arm I assessed the efficacy of antimicrobials used for the eradication of an Enterobacteriaceae urinary isolate(s) that display resistance to fluoroquinolones and SMX/TMP in asymptomatic veterans prior to a urologic procedure. Arm II aimed to assess the incidence of sepsis in veterans after a urologic procedure. Inclusion criteria are: males aged 18 years and older, who had first episode of asymptomatic bacteriuria and a

urine culture positive for ≥ 100,000 colony forming units of an Enterobacteriaceae isolate with resistance to both fluoroquinolones and SMX/TMP. Participants were excluded if the urinalysis (UA) had moderate to many or > 15 epithelial cells in the initial or follow-up culture, concern for prostatitis, no UA at the time of initial or follow up urine culture, subsequent episodes of asymptomatic bacteriuria, or no upcoming urologic procedure planned.

Results: Twenty-five subjects were included in this study. Each subject was only included once for each primary outcome, however a subject can be included in both arms. Arm I consists of 9 subjects who had a positive urine culture resistant to fluoroquinolones and SMX/TMP that were treated with antimicrobials and had a repeat urine culture prior to a urologic procedure. Repeat urine culture was negative in 7 subjects. Five subjects had a chronic indwelling foley catheter, of these 4 subjects had a negative repeat urine culture. The most commonly prescribed antibiotic was cefuroxime which was given to 5 subjects, 4 of which had a negative repeat urine culture. Nitrofurantoin, amoxicillin- clavulanate, cephalexin, and ertapenem were other antibiotics prescribed for the treatment of asymptomatic bacteriuria. Arm II consists of 21 subjects that were assessed for the occurrence of septic events. Majority of the subjects (86%) in arm II received appropriate antimicrobial therapy prior to a urologic procedure. Three subjects (14%) were not treated in accordance to current guidelines. One of these subjects developed sepsis and the other 2 subjects did not receive antibiotics as their urine cultures did not result as positive until the day of the procedure.

Conclusion: The majority of subjects with asymptomatic bacteriuria resistant to fluoroquinolones and SMX/TMP were treated with and responded to cefuroxime. Patients whom were treated with cefuroxime experienced an 80% cure rate. Presence of a chronic indwelling foley catheter resulted in a 20% rate of bacteriologic treatment failure. Treatment of asymptomatic bacteriuria prior to a planned urologic procedure varied widely at JBVAMC, as multiple antimicrobial strategies were utilized. Antimicrobial therapy was in accordance with guidelines in 86% of the subjects. This study provides insight on prescribing habits and the efficacy of alternative agents for treating asymptomatic bacteriuria.

Submission Category: Clinical Services Management

Submission Type: Evaluative Study

Session-Board Number: 1-159

Poster Title: Evaluation of smoking cessation outcomes in the patient aligned care team and smoking cessation clinic

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Purpose: Smoking is the number one preventable cause of death in the United States. The transdermal nicotine patch is a pharmacotherapy for smoking cessation and has been shown to double quit rates. Combining behavioral support and medications can further increase success rates. In July 2014, nicotine patches were made available to all providers at Jesse Brown Veterans Affairs Medical Center (JBVAMC). Previously, nicotine patches were restricted to specialty clinics. Since the patch was made available, the use of the nicotine patch and smoking cessation outcomes have not been compared between patient aligned care team (PACT) and smoking cessation clinic (SCC).

Methods: This institutional review board approved study was a retrospective, electronic chart review of patients newly initiated on nicotine patch at JBVAMC. Smoke free status was defined as smoke free documentation in a progress note. Data was collected from April 1, 2014 to September 30, 2015 to allow for review 3 months prior to prescription and a 6 month follow-up period.
Patients were included if they received a nicotine replacement therapy (NRT) patch between July 1, 2014 and March 31, 2015. The following patients were excluded: pregnant females, those using smokeless or chewing tobacco, patients on varenicline, bupropion, or non-formulary NRT including inhaler or nasal spray formulations. Patients were also excluded if they received NRT from other services besides SCC or PACT, or if they received a NRT patch within 3 months prior to the initial prescription. Included patients were classified into either SCC or PACT groups. Patients that were initiated on NRT in PACT but followed up in SCC were included in the SCC group. The primary endpoint was the efficacy of the nicotine patch for smoking

cessation in the PACT clinic compared with the specialty SCC. The secondary endpoints included time to smoking cessation and time to follow-up.

Results: One hundred and twenty-six patients were randomly evaluated in this study, of which 52 were included and 74 were excluded. The percent of patients achieving a smoke free status was greater in the SCC group but not significantly different between the groups (28 percent vs 15 percent, p equals 0.51). Time to smoking cessation was similar in the two groups (2.0 vs 2.4 months, p equals 0.72). Number of follow-up appointments was significantly higher in the SCC group (3.2 vs 1.7, p equals 0.01). Time to follow-up appointments was significantly less in the SCC group (1.1 vs 2.9 months, p less than 0.01). The number of patients prescribed combination NRT (nicotine replacement therapy) was significantly higher in the SCC group (14 vs 7, p less than 0.01).

Conclusion: Smoke free status was achieved in a higher percentage of patients treated in the SCC compared to PACT at JBVAMC. Veterans were more likely to be prescribed combination NRT and had sooner and more frequent follow-up in the SCC.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-160

Poster Title: Risk of pancreatitis in hypertriglyceridemic Veterans with fibrate use

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Purpose: Hypertriglyceridemia (HTG) is one of the most common causes of acute pancreatitis. The use of fibrates is prevalent for high triglycerides due to their theorized prophylactic effect on pancreatitis. However, the biggest meta-analyses addressing this topic showed that fibrate therapy may be associated with increased pancreatitis risk. It is therefore important to determine the overall safety of fibrate use in patients with HTG. The purpose of this project is to assess impacts of fibrate use related to risk of pancreatitis, and implement changes to minimize inappropriate prescribing of fibrates in the primary care setting at VA Illiana Health Care System.

Methods: The project will consist of a retrospective chart review of Veterans who received fibrates at VA Illiana. Computerized Patient Record System (CPRS) will be searched for the presence or absence of acute pancreatitis as the primary endpoint. The secondary outcome is a composite atherosclerotic cardiovascular disease (ASCVD) event including acute coronary syndromes, myocardial infarction, stable or unstable angina, coronary or other arterial revascularization, stroke, transient ischemic attack, or peripheral arterial disease presumed to be of atherosclerotic origin. A manual subgroup analysis will be reviewed for specific patient characteristics of patients who developed pancreatitis while on a fibrate. This will include A1c level, use of statin, chronic alcohol consumption, and history of gallstones. The results of this quality improvement analysis would allow providers to better serve the Veteran population through improved understanding of possible outcomes with fibrate use in hypertriglyceridemic management, and determine if a change in practice is warranted.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-161

Poster Title: Evaluation of the need for pharmacy managed inpatient INR monitoring at Veterans Affairs Illiana Health Care System

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Purpose: The 2015 Hospital National Patient Safety Goals address the need to reduce patient harm associated with the use of anticoagulation therapy. Warfarin is a commonly used anticoagulant for the following conditions: atrial fibrillation, deep vein thrombosis, pulmonary embolism, and heart valve replacements. Previous studies have shown the effectiveness of pharmacist-managed warfarin protocols in the inpatient setting. The benefits of pharmacist involvement are increased patient safety and fewer INRs outside of therapeutic goal. The goal of this study is to assess the need for pharmacist managed warfarin in the inpatient setting of VA Illiana Health Care System to improve patient care.

Methods: Data for this study was collected through a retrospective chart review. The patient population consisted of patients managed with warfarin while inpatient and who continued care with the outpatient warfarin clinic at Veterans Affairs Illiana Health Care System. This study includes patients managed from September 2014 to September 2016 by the warfarin clinic either prior to inpatient admission or after discharge. Patients with any of the following indications for warfarin were included: recurrent DVT/PE, atrial fibrillation, or heart valve replacement. The primary outcome was to determine the percent time in therapeutic range INR when comparing inpatient physician managed warfarin and outpatient pharmacist managed warfarin. Secondary endpoints include adverse bleeding events or thromboembolic event while inpatient. Subgroup analysis included indication for warfarin, warfarin dose, INR values, gender, age 60 or older, CHADS2 score, length of time on anticoagulant, and percentage of INR levels within therapeutic range while inpatient and outpatient. Based on these results, the inpatient pharmacy may develop an inpatient warfarin management protocol to be maintained by staff pharmacists. This quality improvement study was approved by the residency advisory

committee prior to commencement. All information remained confidential throughout the study.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Evaluative Study

Session-Board Number: 1-162

Poster Title: National evaluation of lithium laboratory monitoring in a Veteran population

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Purpose: Lithium, a medication which is used in the treatment of bipolar disorder, possesses a narrow therapeutic index. It is recommended that patients have their lithium levels monitored every 4-14 days during the initial titration period, then every 3 to 6 months thereafter to assure appropriate levels and minimize the potential for adverse events. The purpose of this medication use evaluation (MUE) was to assess and characterize Veterans on chronic lithium therapy who did not have a serum lithium concentration documented within a 9-month timeframe.

Methods: Per VHA Handbook 1058.05, this activity does not constitute research and, therefore, did not require IRB review. Centralized chart review of patients from across the Department of Veteran's Affairs (VA) health care system was conducted retrospectively. Male and female Veterans aged 18 years and older who were prevalent users of lithium between April 1, 2015 and June 30, 2016 and did not have a concentration assessed in the prior 9 months were included in this evaluation. A computer-generated, random sample of 150 patients (5%) from the overall national population of approximately 3,000 lithium users who did not have a concentration drawn in the past 9 months was used for the evaluation. VA databases were utilized to obtain demographics, diagnostic information, prescription history, and laboratory information. In-depth chart reviews were performed to determine the date the most recent lithium concentration was drawn and the location of the laboratory test (i.e., VA versus non-VA). Progress notes were reviewed to find documentation as to why lithium levels were not drawn and to describe any potential adverse drug events (ADEs) related to lithium therapy and their management. Chart review was also used to assess adherence with obtaining other

required annual labs in patients receiving lithium, including a serum creatinine, calcium, CBC with differential, and thyroid profile. Once collected, data were assessed using descriptive statistics.

Results: When the date of the most recent lithium concentration was assessed, 32% of patients (N=48) never had a lithium level documented in the chart. Of these patients, 54% (N=26) were a new start, or had been re-initiated on lithium in the past 12 months. Twenty-seven percent (N=41) of patients had their most recent lithium level drawn in the previous 9-12 months. Of the 150 lithium users who did not have a concentration drawn in the prior 9 months, 22% (N=33) had been initiated or re-initiated on lithium in the past 12 months. When assessing potential reasons why the lithium level was not drawn, thirty-two percent (N=48) of patients had a lithium level ordered, but it was never collected. Forty percent of patients (N=60) did not have a reason stated as to why a lithium concentration was not ordered, and 11% (N=16) were lost to follow-up or missed their appointment. Other labs recommended annually in patients taking lithium, including serum creatinine, calcium, CBC with differential, and a thyroid profile, were completed in 72-87% (N=108-130) of patients. Adverse drug events related to lithium were documented in 13% (N=19) of patients; the most common complaints were neurologic or gastrointestinal.

Conclusion: Of the lithium patients without a concentration documented within 9 months, 22% were new starts; one-third never had a level documented, and more than half of these patients were new starts. Common reasons, when stated, for not having a lithium concentration were lab ordered and not collected and patient lost to follow-up/missed appointment. Based on these findings, providers have been re-educated about the monitoring requirements for lithium patients. In addition, a tool that was previously created to identify patients without a lithium level in over 6 months will be updated to include prospective monitoring of patients newly initiated on lithium.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-163

Poster Title: Evaluation of appropriate referrals, discharges, and no-show rates to optimize pharmacist time in patient-aligned care teams (PACT)

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Purpose: The primary purpose of this research is to assess and evaluate the no-show rates of veterans in the primary care setting at the Richard L. Roudebush VA Medical Center while also evaluating whether or not patients are appropriately referred and/or discharged to the pharmacist for chronic disease state management by the primary care physician. Additional targets will be developing standard practices to reduce overall no-show rates as well as formulating standard referral and discharge criteria for the facility. The ultimate goal of this process improvement project is to optimize pharmacist utilization within the patient-aligned care team (PACT) health delivery model.

Methods: Current methods for patient communication regarding appointment reminders, definition of no-shows, and documentation for patient no-shows have been evaluated and are deemed to be inconsistent across different primary care clinics within the Richard L. Roudebush VA Medical Center. Similarly, the patient referral and discharge process has been shown to be inconsistent across primary care clinics as well, potentially leading to inappropriate pharmacist utilization within the PACT team. Researchers have and will continue to facilitate focus groups from the respective clinics to identify current problems within the system, trial potential solutions, and implement best practices from the findings. Results from this project will be used to change standard practice for within primary care clinics at the Richard L. Roudebush VA Medical Center with hopes to maximize pharmacist involvement in clinics, ensure pharmacists are practicing at the top of their license, and ultimately increase patient access within the health system.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-164

Poster Title: Assessment of the ordering process for antipsychotic long-acting injections between care transitions

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Purpose: Long-acting injectable (LAI) antipsychotics have become a useful tool for treating patients with psychiatric disorders. Currently, however, there is no process in place that ensures a patient's LAI antipsychotic medication will be on their inpatient medication profile when then are transferred from outpatient to inpatient status. This may result in duplication of therapy, errors of omission, unanticipated drug interactions, and potential harm to patients. Additionally, there is no data available that addresses medication errors associated with LAI antipsychotic use and care transitions. The aim of this project is to create a process that prevents these medication discrepancies from occurring.

Methods: A retrospective chart review will be performed using Computerized Patient Record System (CPRS) and Decentralized Hospital Computer Program (DHCP). Charts will be assessed for medication discrepancies for patients who were admitted to the VA on an LAI antipsychotic. Using the data compiled from the chart review, rapid experiments will be developed and performed within CPRS will to determine how to best document LAI antipsychotic use in order to prevent medication errors. Upon completion of rapid experiments recommendations for processing changes in CPRS will be formulated and implemented.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 1-165

Poster Title: Implementation and evaluation of a transitional plan of care (TPOC) for pharmacy service at a single veterans affairs medical center

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Purpose: To facilitate strategic and tactical planning for Pharmacy Service that leads to the development of process improvement initiatives. The implementation of these projects will align with the departmental vision to be a nationally recognized leader in the provision of quality pharmaceutical care across the healthcare continuum.

Methods: Prior to the start of FY17, pharmacy administration met to participate in a strategic planning retreat. This meeting was conducted utilizing the principles of LEAN process improvement. The creation and continuation of process improvement initiatives within Pharmacy Service was emphasized throughout the retreat. After determination of projects with highest value-added potential, focus was placed on the prioritization of projects among various value streams created by the administration team: USP 800, People, Standard Work, Technology, and Physical Space. Upon completion of the retreat, tasks will be distributed among various members of the Pharmacy Service for execution. The status of projects, staff involvement, and impact on both pharmacy and facility outcome measures will be continually assessed throughout the year to determine efficacy.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-166

Poster Title: Improving attendance at an interdisciplinary smoking cessation drop-in group medical appointment by utilizing lean process improvement principles

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Purpose: Approximately 16.8% of adults in the United States smoke, including 30% of active military personnel and 22% of veterans. In 2015, a motivational interviewing based interdisciplinary smoking cessation drop-in group medical appointment (DIGMA) was formed at the Richard L. Roudebush Veterans Affairs Medical Center. The objective of this study is to improve patient attendance at the group to better combat tobacco use by veterans.

Methods: This quality improvement study will utilize lean process improvement principles to assess barriers to patient attendance at a smoking cessation drop-in group medical appointment (DIGMA). Attendance forms will be used to determine the baseline attendance. The Computerized Patient Record System (CPRS) will be utilized to identify patients who were referred to the smoking cessation DIGMA, but did not attend. Voice of the customer questionnaires will be utilized to assess the barriers that prevent these patients from attending the group appointment. Perceived successes and benefits of the group will be collected from patients who are currently attending or who have attended the group through questionnaires. Barriers that prevent members of the healthcare team from referring patients to the smoking cessation group will be determined through the use of questionnaires. Themes and data will be extracted from these questionnaires. Subsequent modifications will be made to current practices via rapid experiments to enhance the referral process and attendance surrounding the smoking cessation DIGMA. No personal identifiers, aside from healthcare workers' credentials, will be attained from the voice of the customer questionnaires.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-167

Poster Title: Establishing clinical pharmacy services for chronic obstructive pulmonary disease (COPD) in a primary care setting at a Veterans Affairs Medical Center

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Purpose: Within the VA population, patients with COPD have significantly higher rates of all-cause and respiratory-related health care utilization than patients without COPD. Currently there are several VA sites that offer clinical pharmacy services in COPD management, but this service is not offered at the Richard L. Roudebush VA Medical Center. A recent study at this VA facility showed that with current standard of care, 16% of patients had a COPD exacerbation within one year. The goal of this project is to establish clinical pharmacy services for COPD in a primary care setting.

Methods: This project will be piloted in two primary care clinics with the clinical pharmacy specialists being incorporated into the management of COPD. Scope of practice will be established to allow the initiation, adjustment, and monitoring of medications under protocols decided by both medical and pharmacy staff. The scope of practice will follow both VA/DoD Clinical Practice Guidelines and Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines. In addition to medication management the clinical pharmacy specialists will also ensure proper inhaler technique, evaluate immunization and smoking status, determine medication adherence, and perform the COPD Assessment Test (CAT) or Modified Medical Research Council (mMRC) dyspnea scale.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-168

Poster Title: Targeted interventions to improve time in therapeutic range in a pharmacist-run anticoagulation clinic

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Jiji Thomas

Purpose: Time in therapeutic range (TTR) of international normalized ratio (INR) is important for both the safety and efficacy of therapy with warfarin. Within the Veterans Health Administration, TTR for the anticoagulation service is evaluated each quarter with a goal TTR of 60% or greater. Although the anticoagulation clinic at Richard L. Roudebush Veterans Affairs Medical Center has met this goal, there are still a number of veterans spending a significant time out of therapeutic range. These patients are at higher risk for increased complications such as major bleeding, stroke, and thromboembolism.

Methods: Patients with a TTR of less than 40% during the time period of April 1 and June 30, 2016 were reviewed to assess the factors contributing to a low TTR. Based on the identified factors, interventions were identified to improve TTR for this group of patients. Suggested interventions include transition to a new oral anticoagulant, discontinuation of anticoagulation, assignment to one pharmacist until time in therapeutic range is improved, or other interventions as determined to be indicated based on evaluation by the anticoagulation clinical pharmacy specialists. An initial list of patients with a TTR < 20% for the identified quarter was developed. The anticoagulation clinical pharmacy specialists in the clinic will be responsible for assessing these patients and implementing an appropriate targeted intervention. Interventions will be implemented by the clinical pharmacy specialists from October 1 through December 31, 2016. At the conclusion of this period, the TTR for the entire clinic and the number of patients with a TTR of less than 20% will be assessed to determine if the identified interventions had an impact. Additionally, the implemented interventions will be reviewed for effectiveness and practicality and an improved process will be attempted in the following quarter.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-169

Poster Title: Assessment of outcomes in a secondary and tertiary level pain clinic

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Additional Author (s):
Kelly Henderson

Purpose: The Physical Medicine and Rehabilitation Service (PMRS) Pain Clinic within the Richard L. Roudebush Veteran Affairs Medical Center (VAMC) offers secondary and tertiary level interdisciplinary programs for veterans with chronic non-cancer pain. Outcomes data is collected via the Pain Outcomes Questionnaire-Short Form (POQ-SF), a validated pain scale designed to score multidimensional pain interventions. The objective of this study is to assess the outcomes of patients enrolled in the PMRS secondary and tertiary level pain clinics at the Richard L. Roudebush VAMC to minimize risks of opioid therapy and improve veteran care.

Methods: Data collection and analysis will be completed via a retrospective chart review in the Computerized Patient Record System (CPRS). Inclusion criteria will include age greater than or equal to 18 years old, diagnosis of chronic non-cancer pain, opioid use on admission to program, and enrollment in the PMRS Pain Clinic secondary or tertiary level program. Exclusion criteria includes patients lost to follow-up or patients not completing the POQ-SF. Data collected will include the baseline characteristics, adjunctive non-opioid pharmacologic treatment, morphine equivalent daily dose (MEDD), POQ-SF total score, and POQ-SF individual domain scores on admission and discharge from the tertiary program and on admission and three, six, and nine months post-admission for the secondary program. Data regarding length of enrollment and adjunctive non-pharmacologic therapy will also be collected for secondary level patients. Each program will be assessed individually and data will not be compared. Approval for this study is being sought from the Indiana University institutional review board.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-170

Poster Title: Effect of DPP4 Inhibitors on Heart Failure Admission Rates in the Veteran Population: An Observational Review

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Additional Author (s):
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Michael Buck

Purpose: In the treatment of type 2 diabetes mellitus, dipeptidyl peptidase-4 inhibitors are not only widely considered effective modulators of fasting and postprandial hyperglycemia, but also have shown potential protective benefits for the cardiovascular system. In 2013 the SAVOR-TIMI 53 clinical trial found an increased risk of heart failure hospitalization among users of saxagliptin as a secondary outcome. Follow-up studies have largely been unable to replicate these findings. This study aims to be one of the largest investigations to date examining the safety and efficacy of dipeptidyl peptidase-4 inhibitors in type 2 diabetes mellitus in relation to heart failure hospitalizations.

Methods: This is an observational, multi-center cohort study that will utilize data from patients to understand the potential correlation between dipeptidyl peptidase-4 inhibitors and heart failure hospitalizations in patients diagnosed with type 2 diabetes mellitus. Data will be extracted and maintained within the Informatics and Computing Infrastructure workspace. Duration of data collection will be 3 years, consisting of records from August 2013 until August 2016. The primary outcome of this study will be to determine heart failure hospitalization rates for patients taking dipeptidyl peptidase-4 inhibitors in addition to standard of care therapy for type 2 diabetes mellitus versus patients taking standard of care therapy for type 2 diabetes mellitus alone.

Results: Results in progress

Conclusion: Conclusion in progress

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-171

Poster Title: Impact of alcohol abuse on mortality following hepatitis C treatment with direct-acting antivirals: A national cohort study of Veterans Affairs patients

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Additional Author (s):
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Michael Cobretti
Mary Oehlert

Purpose: The treatment of hepatitis C (HCV) has changed dramatically over the past several years with the approval of several direct-acting therapies that have increased the treatment success while decreasing adverse side effects. In many of the clinical trials patients who are alcohol dependent were excluded from participation in the studies. As a result, the effect of these treatments remains unknown within this population. This observational study looks to analyze the mortality effect on those who have a history of alcohol dependency and have been treated with a direct-acting antiviral.

Methods: This is an observational, multi-center cohort study utilizing nation-wide data from within the Veterans Affairs network to describe the mortality effect of HCV treatment with direct-acting antivirals (DAA) on alcohol dependent persons. The data is managed by the National Corporate Data Warehouse (CDW) and will be accessed via the VA Informatics and Computing Infrastructure (VINCI). Clinical data from subjects that meet inclusion criteria (prescription fill history for any DAA) will be collected then screened for exclusion criteria. Data will be collected from October 1, 2013 through August 31, 2016. The primary outcome of the study will be survival. Secondary outcomes will include a time to death analysis and incidence of hepatocellular carcinoma. Alcohol abuse will be determined by the combination of ICD9/10 codes and Alcohol Use Disorders Identification Test (AUDIT-C) scores. Additional information collected will include viral genotype, hepatic function tests, dates of birth and death (if applicable), and others. Statistical analysis of patient demographic data of between group differences will be evaluated by paired t-test for continuous variables or chi-squared tests if

categorical. Outcome data will be analyzed using a chi-squared test for categorical outcomes. Kaplan-Meier curves will be prepared for the time to death outcome and analyzed with a log-rank test to determine statistical significance. A p-value of less than 0.05 will be considered statistically significant in all cases.

Results: N/A, research in progress

Conclusion: N/A, research in progress

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-172

Poster Title: Characterizing the utility of melatonin for sleep disorders in the veteran population

Primary Author: Jenna Gilbert, Lexington VA Medical Center, KY; **Email:** jenna.gilbert@va.gov

Additional Author (s):
Courtney Eatmon

Purpose: Sleep disorders are widespread and affect overall health and well-being. Current treatments for insomnia include medications with addiction potential and harmful side effects. Melatonin is a naturally-produced hormone which is thought to aid in regulation of the sleep cycle. As an herbal sleep aid, melatonin lacks addictive properties and has a low potential for side effects. Little data exists on melatonin use or prescribing patterns for sleep disorders in clinical practice. The objective of this study is to characterize the utility of melatonin for sleep disorders within a single VA Medical Center.

Methods: This study will utilize retrospective chart review to obtain data. Patients will be included if they received a prescription for melatonin as an outpatient from the Lexington VA Medical Center at any time from December 1, 2015 to August 31, 2016, as identified by the electronic medical record system. Patients who received melatonin for an indication other than a sleep disorder will be excluded. The following data regarding melatonin will be collected: duration of treatment, dose, adherence, and use in special populations including the elderly or those with a history of substance use disorder. Prior sleep disorder treatment will be assessed, along with concomitant sedating medications indicated for sleep. Additionally, presence of medications and conditions that can contribute to insomnia will be analyzed. Descriptive statistics will be used to analyze data. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 1-173

Poster Title: Implementation of a pharmacist-led benzodiazepine taper clinic

Primary Author: Ali Saghaian, Lexington Veterans Affairs Medical Center, KY; **Email:** asaghaian@gmail.com

Additional Author (s):
Courtney Eatmon
Justin Butler

Purpose: Long-term use of benzodiazepines leads to the development of tolerance and a loss of efficacy. Use of benzodiazepines exceeding two to four weeks will increase the risk of dependence, making it important to gradually taper the medication to avoid the potential for withdrawal symptoms or rebound of the underlying condition. The objective of this project is to facilitate safe tapering by providing a helpful new service in the form of a pharmacist-led benzodiazepine taper clinic, thereby reducing inappropriate benzodiazepine use and increasing taper success.

Methods: Eligible patients will be referred to the benzodiazepine taper clinic by their provider. Once referred, patients will meet with the psychiatric pharmacy resident or mental health pharmacist to undergo a brief educational session regarding benefits, risks, and expectations of their benzodiazepine taper. Patients who agree to the benzodiazepine taper will then be provided an individualized taper protocol. The referring provider will maintain prescriptive responsibility for the duration of the taper. The psychiatric pharmacy resident or mental health pharmacist will coordinate with the provider for benzodiazepine prescribing during the taper. Patients will be followed by phone or face-to-face at least every two weeks while their taper is ongoing. Generalized Anxiety Disorder-7 (GAD-7) and Insomnia Symptom Questionnaire (ISQ) self-assessment tools will be utilized at targeted intervals. Based on clinical assessment, further outpatient management of the benzodiazepine taper will be modified or continued as clinically appropriate. Data for all patients, including initial benzodiazepine, dosage, indication, duration of use, details of the taper regimen, and ultimate success will be recorded and saved without patient identifiers. This study is considered a quality improvement project and as such is IRB exempt. It will be submitted to the research and development committee for publishing approval upon its completion.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-174

Poster Title: Evaluation of the management of type 2 diabetes mellitus outpatient insulin users in an inpatient setting within a Veterans Affairs Medical Center

Primary Author: Stephanie Keca, Lexington Veterans Affairs Medical Center, KY; **Email:** stephanie.keca@va.gov

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Purpose: Maintaining adequate blood glucose control in the inpatient setting has been associated with decreased mortality, shorter lengths of stay, and lower complication rates. However, literature regarding inpatient insulin requirements of type 2 diabetic outpatient insulin users remains unclear. The purpose of this study is to review inpatient insulin dosing for type 2 diabetics managed with insulin in the outpatient setting and analyze resultant glycemic control. This study hopes to either provide clinical evidence to support the practice of decreasing insulin doses upon admission or contribute an alternate inpatient insulin management strategy to better guide future practice.

Methods: The study is a retrospective case-series utilizing database analysis and chart review and is pending Research and Development Committee approval. The computerized patient record system (CPRS) will be reviewed for type 2 diabetics admitted between 1/1/2013 and 12/31/2015 who filled an outpatient prescription at the study site for either basal/bolus or premixed 70/30 insulins within 90 days prior to admission. The following data will be collected: patient demographics (age, race, weight, height, body mass index [BMI], diagnosis of renal or cardiovascular disease), admitting diagnosis, HbA1c pre- and post-hospitalization, total daily doses of insulin before, during, and after hospitalization, dietary status during hospitalization, number of blood glucose levels classified as low (below 70mg/dL), target (70-180mg/dL), high (180-300mg/dL), and very high (above 300mg/dL), administration of glucose or glucagon for hypoglycemic episodes, length of stay, and pertinent concomitant medications (angiotensin-converting enzyme inhibitors [ACEI], angiotensin receptor blockers [ARB], beta-blockers, antibiotics, corticosteroids, atypical antipsychotics, non-insulin antihyperglycemics, HGM-CoA

reductase inhibitors, aspirin, and medication used to manage diabetic neuropathy). All data will be de-identified to maintain confidentially. Patients will be stratified according to their HbA1c before admission (below 8, 8-8.99, 9 and above). Total daily doses will be calculated as total insulin units administered during admission divided by length of stay and inpatient glycemic control will be measured by the percentage of time patients spend hypoglycemic, hyperglycemic, and within target glycemic range.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-175

Poster Title: Outcomes of an inpatient proton pump inhibitor stewardship program post hospital discharge

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Purpose: Proton pump inhibitors (PPIs) are widely used in the treatment of acid-related disorders, however, studies suggest that up to 80% of PPIs are prescribed without an evidence-based indication. PPIs have been associated with adverse events, including pneumonia, fractures, and Clostridium difficile infection. Based on this information, a PPI stewardship program was created at a single institution, to evaluate for appropriateness of inpatient and outpatient PPI continuation and to subsequently discontinue inappropriate PPI therapy. The purpose of this study is to evaluate the success of a PPI stewardship program in discontinuing PPIs without proper indications upon hospital discharge.

Methods: Institutional Review Board approval has been obtained to conduct this retrospective cohort study. All patients admitted to an internal medicine service from 3/14/16 to 8/14/16 on a home PPI were evaluated by the PPI stewardship team for appropriate indications to continue therapy. All patients who were counseled to discontinue their PPI at hospital discharge will be included in this study. The primary objective of this study is to determine the percentage of patients who successfully discontinued their PPI upon hospital discharge as a result of the PPI stewardship program. Successful discontinuation will be defined as no refill of a PPI within 90 days of discharge, or other documentation in the electronic medical record of successful discontinuation. The secondary objective of this study is to compare those patients with successful and unsuccessful discontinuation to evaluate risk factors that may contribute to patients' failure to successfully discontinue PPI therapy.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-176

Poster Title: Effect of high-dose ergocalciferol on rate of falls in a community-dwelling, veteran population: a case-crossover study.

Primary Author: Ryan Albers, Lexington Veterans Affairs Medical Center, KY; **Email:** ryan.albers1@va.gov

Additional Author (s):
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Purpose: Previous research has identified a benefit associated with vitamin D supplementation on risk and rate of falls in advanced age. Recent evidence suggests a negative impact of high-dose vitamin D3 supplementation on the same measures. At this time, there is scarce literature available describing fall outcomes related to high-dose vitamin D2 supplementation. The purpose of this study is to evaluate the effect of high-dose ergocalciferol on rate of falls in a community-dwelling, veteran population with low 25-hydroxy vitamin D.

Methods: This retrospective, case-crossover study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients enrolled in home-based primary care who are 65 years of age or older, have had a level of 25-hydroxy vitamin D less than 20 ng/mL, and subsequently received vitamin D supplementation with high-dose ergocalciferol. Patients who were enrolled in home-based primary care for less than 30 days prior to supplementation and those with chronic conditions that inherently increase the risk of falls will be excluded. Data to be collected will include age, sex, levels of 25-hydroxy vitamin D, ergocalciferol prescription data as well as additional forms of vitamin D supplementation if prescribed, total falls and fallers prior to and during supplementation, and medications that increase risk of falls actively prescribed prior to and during supplementation. The primary outcome measure will be a change in rate of falls between the time periods prior to supplementation and during supplementation. The secondary outcome will be the rate of falls according to the level of 25-hydroxy vitamin D as a result of supplementation.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-177

Poster Title: Readmission rates after the establishment of a stable oral loop diuretic regimen prior to discharge following hospitalization for heart failure exacerbation

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Additional Author (s):
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Grace McCoy
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Purpose: When patients are admitted to the hospital for heart failure (HF) exacerbation, loop diuretics are dosed aggressively and variably. Patients are often discharged before an optimal outpatient diuretic regimen is determined. The objective of this analysis is to determine if there is a difference in 30-day rate of readmission for patients admitted for HF exacerbation who were established on a stable oral loop diuretic regimen for 24 hours prior to discharge compared to patients who were not. Stable oral loop diuretic regimen for 24 hours is defined as receiving the discharge diuretic regimen on the day prior to discharge.

Methods: Patients discharged from the Robley Rex VAMC with a discharge diagnosis of HF exacerbation will be selected and the inclusion and exclusion criteria will be applied to identify the analysis population. Once a patient is included in the analysis, the following data will be collected: demographics, age, height, weight, co-morbidities, pre-admission HF medication regimen, inpatient diuretic regimen, serum creatinine (SCr) and blood urea nitrogen (BUN) on admission and discharge, and date of original admission. Each patient will then be followed for 30 days following discharge and the following data will be recorded: HF medication changes at outpatient follow-up, any patient readmissions, and any patient deaths. For patients who are readmitted, the time to readmission as well as the SCr and BUN at readmission will be collected. Rate of 30-day readmission will be calculated as well as percentage change in diuretic dose from admission to discharge, mean duration of original admission in days mean time in days from discharge to readmission, rate of acute kidney injury and dehydration on readmission

using BUN:SCr ratios and change in SCr, mortality data, and rate of readmission based on medication-related risk factors. All data will be de-identified and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-178

Poster Title: Evaluation of pharmacist impact on antipsychotic and benzodiazepine utilization in veterans with dementia

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Additional Author (s):
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Crystal Owens
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Holly Long

Purpose: It has been well established that use of Antipsychotics (APs) and Benzodiazepines (BZDs) in the elderly population is associated with increased incidence of adverse effects including sedation, falls, and cognitive impairment. The Veterans Health Administration (VHA) introduced the Psychotropic Drug Safety Initiative (PDSI) to improve evidence-based psychotropic drug prescribing for Veterans with mental illness. This initiative aims to address possible issues with pharmacotherapy such as overprescribing, clinical management, and inappropriate indications. The purpose of this project is to assess the impact of recommendations made by a pharmacist on the utilization of APs and BZDs in patients with dementia.

Methods: This retrospective review will be conducted at the Robley Rex Veterans Affairs Medical Center in Louisville, Kentucky. All Veterans identified as actionable through the PDSI dashboard on September 15, 2016 will be eligible for selection. Veterans will be excluded if they are receiving hospice care or have had their AP or BZD therapy reviewed by a pharmacist with recommendations documented in the Computerized Patient Record System (CPRS) within the previous 12 months. A report of actionable Veterans meeting inclusion criteria will be generated on September 15, 2016 from the PDSI dashboard. Once this list is generated, demographic information and data will be obtained from CPRS, the Veterans Health Information Systems and Technology Architecture (VISTA), and the PDSI dashboard. Following the collection of demographic information and chart review, a recommendation on the utilization of the AP or BZD agent will be documented by the pharmacist in CPRS. The

provider will receive a notification to review the note and follow-up will be performed via chart review 90 days after entry date of the recommendation. All information will be collected in a de-identified Excel spreadsheet to evaluate the provider's response to the recommendation. Descriptive statistics of primary and secondary endpoints will be compiled using Microsoft Excel. Data will be reported in numbers and percentages. Percent change will be evaluated over a 90 day time period.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-179

Poster Title: Retrospective analysis of the efficacy and safety of add-on therapy of liraglutide to insulin glargine for the treatment of type 2 diabetes mellitus

Primary Author: Katherine Czarnowski, VA Boston Healthcare System, MA; **Email:** katherine.czarnowski@va.gov

Additional Author (s):
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Purpose: Glucagon-Like Peptide-1 (GLP-1) is an incretin hormone that stimulates insulin release, suppresses glucagon levels, and delays gastric emptying in response to meal ingestion. Patients with diabetes have an impaired secretion of GLP-1. Combination therapy of GLP-1 receptor agonists and basal insulin offer many benefits over traditional basal, bolus insulin regimens including fewer injections, additional weight reduction, and fewer hypoglycemic events. Similar to bolus insulin, GLP-1 receptor agonists reduce post prandial glucose. The primary objective will be to examine the hemoglobin A1c reduction when liraglutide is added to basal insulin. Secondary objectives will include reduction in weight, hypoglycemia, and insulin requirements.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have outpatient prescriptions from January 2010 to December 2016 for either insulin glargine, liraglutide, or both at the VA Boston Healthcare System. The following data will be collected: patient age, gender, hemoglobin A1c, body weight, and insulin doses. Provider documentation will be reviewed to determine incidence of hypoglycemia. The investigators will evaluate the average reduction in hemoglobin A1c, body weight, hypoglycemic episodes, and insulin. All data will be kept confidential.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-180

Poster Title: Establishing the Necessity of a Fracture Liaison Service to Optimize Post-fracture care in Osteoporotic Patients

Primary Author: Sahil Jain, VA Boston Healthcare System, MA; **Email:** sahil.jain@va.gov

Additional Author (s):
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Purpose: Osteoporotic-related fractures dramatically impact patients' health and quality of life. These fractures result in significant morbidity and mortality, while burdening the healthcare system as a whole. The primary prevention of these events is ideal; however, preventing future fractures following the first one is a critical part of caring for patients with osteoporosis. The purpose of our research is to determine the need for a standardized treatment program known as the Fracture Liaison Service in the VA Boston system. This service will identify patients with osteoporosis-related fractures in a timely manner and provide optimal care in concurrence with Primary Care.

Methods: We will utilize a data warehouse to retrospectively analyze data and identify osteoporotic veterans who have had hip and vertebral fractures. The data query will collect information regarding the types of fractures, recent DXA scan(s), laboratory results, and whether the patient is receiving appropriate therapy for treatment of osteoporosis. After identifying these individuals, we will perform a comprehensive chart review to determine whether the cause of the fracture is osteoporosis-related. This review will also serve to recognize and exclude patients from eligibility for osteoporosis work-up and management at the VA (patients receiving hospice, non-VA care). We will proceed to analyze the data to determine if the patients have received correct testing for osteoporosis work-up. The appropriateness of these tests will be based upon recommendations from the 2014 Osteoporosis Foundation guidelines. If it is determined that post-fracture care in our osteoporotic patients is inadequate, we will work with the Endocrine team to develop the Fracture Liaison Service (FLS). The FLS will order further tests, when necessary. In concurrence

with primary care, the FLS will utilize the results of these tests to determine the severity of the veteran's osteoporosis. This information will establish the need for further osteoporosis work up, if necessary. Any contraindications to medications used for the treatment of osteoporosis can be identified as well. Finally, the FLS will provide recommendations to optimize post-fracture management.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 1-181

Poster Title: Phenobarbital for the treatment of acute alcohol withdrawal in the medical ICU in a veteran population

Primary Author: Chelsea Henderson, VA Boston Healthcare System, MA; **Email:** ceh57@pitt.edu

Additional Author (s):
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Tekikil Mekuria

Purpose: The purpose of this study is to evaluate the safety and efficacy of phenobarbital compared to benzodiazepines for acute alcohol withdrawal in a veteran population. Benzodiazepines are a standard treatment for acute alcohol withdrawal (AAW) in the inpatient setting. However, patients with multiple admissions for detox can become refractory to benzodiazepine therapy and require much higher doses to manage their withdrawal. Case reports and retrospective studies document benefit of using phenobarbital in high risk patients who have a history of complicated withdrawal symptoms such as delirium tremens and prolonged ICU stays requiring intubation.

Methods: Phenobarbital augments GABA inhibitory response and reduce the effect of glutamate excitatory response. This dual mechanism of action makes it an effective treatment for AAW in benzodiazepine resistant patients. This retrospective, observational study has been submitted to the Institutional Review Board for approval. Patients admitted to the medical ICU (MICU) who had been initiated on a weight-based intravenous phenobarbital protocol for AAW will be included. The intervention was a weight-based phenobarbital loading dose followed by a twice daily oral taper based on Riker Sedation-Agitation scoring. Patients admitted to the MICU prior to the implementation of the phenobarbital protocol who received symptom-based benzodiazepine therapy will be used as the comparator group. The primary efficacy endpoint will be ICU length of stay. Secondary efficacy endpoints will include time to resolution of symptoms, seizure activity, and adjunct medication use. Safety endpoints will include respiratory depression, change in mental status, and intubation. Statistical analysis will include nominal variable analysis using the Fishers Exact Test and continuous data using the Mann-Whitney U Test.

Results: Results in progress.

Conclusion: Not applicable at this time.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-182

Poster Title: Retrospective analysis of the impact of a conversion between tiotropium inhalation mechanisms in a veteran population with chronic obstructive pulmonary disease

Primary Author: Brittany Pietruszka, VA Boston Healthcare System, MA; **Email:** brittany.pietruszka@gmail.com

Additional Author (s):
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Purpose: Tiotropium is a long acting muscarinic antagonist used to manage patients with chronic obstructive pulmonary disease (COPD) and asthma. Patients at the VA Boston Healthcare System (VABHS) who were previously on tiotropium dry powder inhaler were converted to an aqueous solution based system for device ease of use. A study comparing the two different inhalation mechanisms found comparable improvements in pulmonary function and risk for COPD exacerbations. This study is aimed to evaluate alterations in COPD control and its medication management in a veteran population before and after inhalation mechanism conversion.

Methods: Prior to commencement, this 16-month retrospective chart review will be submitted to the VABHS institutional review board for approval. Patients at the VA Boston Healthcare System with an active diagnosis of COPD defined by International Classification of Diseases (ICD-10) diagnosis code J44.9 on tiotropium during the time period from May 1st, 2015 to September 30th, 2016 will be identified and studied. In order to minimize confounders, patients will serve as their own controls eight months prior to and eight months after the conversion. Data collection will be performed by extracting information from VABHS electronic medical records and will include: patient demographics, smoking status, respiratory-related emergency department visits, COPD exacerbation admission rates, percent of predicted forced expiratory volume in one second (FEV1), alteration of COPD medication regimens, rescue inhaler usage, and medication refill histories. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-183

Poster Title: Application and validation of 7-day antibiotic therapy for hospital-acquired pneumonia: a collaborative antimicrobial stewardship initiative

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Additional Author (s):
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Purpose: The most recent updates to the Infectious Disease Society of America (IDSA) clinical practice guidelines recommend a 7-day course of antimicrobial therapy for hospital-acquired pneumonia (HAP) to reduce antibiotic usage and emerging multi-drug resistant (MDR) pathogen infections. This study will aim to evaluate a hospital-wide initiative to promote and validate this recommendation.

Methods: Inpatient clinical pharmacists at the VA Medical Center-West Roxbury will monitor all patients receiving antibiotic therapy for HAP, and document a note in each patient's charts when they have received 6 days of antimicrobial therapy for HAP. These notes will alert the ordering physicians about the IDSA 7-day duration recommendation. If continuation beyond 7-days of therapy is to be considered, then the physicians will request approval from an infectious disease physician. After review of the patient, the infectious disease physician can decide concurrently with the ordering physician if longer therapy is clinically indicated. This study will evaluate this initiative, and will be first submitted for approval from the Institutional Review Board (IRB). The study investigators will determine if this initiative can successfully reduce the 28-day antibiotic-free days for HAP patients. Patient data on antibiotic administration for this indication will be collected for a 6-month period, which will be compared to data from 6 months prior to initiating this protocol. Validation of this recommendation will be evaluated by collecting the following: reinfections, microbiology culture/sensitivity reports, hospital length of stay, and death. Baseline demographics of patients will also be reported to assess applicability of results to other populations.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-184

Poster Title: Improving medication reconciliation in a veterans affairs nursing home: Participation in the medication reconciliation quality improvement study (MARQUIS)

Primary Author: Laura Driscoll, VA Boston Healthcare System, MA; **Email:** lkd07001@gmail.com

Additional Author (s):
Amy Baughman

Purpose: Unintentional medication discrepancies are common and may cause patient harm. Medication reconciliation is recognized by the Joint Commission as a National Patient Safety priority. The Brockton Community Living Center (CLC) of the VA Boston Healthcare System will participate in a national quality improved study, MARQUIS2, to improve medication reconciliation practices. Currently, medication reconciliation is performed by the physicians and nurses without pharmacy involvement. The process is not standardized and varies by healthcare provider. The primary objective of this study is to reduce medication discrepancies by implementing interventions from the Medication Reconciliation Quality Improvement Study (MARQUIS) toolkit.

Methods: This is a quality improvement study that has been submitted to the Institutional Review Board for approval. In phase one, existing medication reconciliation performance will be examined and CLC providers will be surveyed to assess the current medication reconciliation process and to identify areas in need of improvement. A baseline rate of medication reconciliation discrepancies will be determined by chart review. Phase two will include implementation of interventions according to the MARQUIS toolkit. One intervention will be to stratify patients according to risk in order to provide additional pharmacy support for high risk patients. Specifically, patients identified as high risk will receive intensive interview and reconciliation performed by a pharmacist to obtain the best possible medication history. High risk patients will be considered those in which provider has clinical concern, or those with the presence of any two of the following: patient or caregiver cannot provide medication list or pill bottles, more than ten pre-admission medications or more than three high risk medications. High risk medications include anticoagulants, antiplatelets, insulin, oral hypoglycemics, opioids and digoxin. Data collected will include the number and types of discrepancies. Discrepancies will be categorized as omitted drug, discrepant brand, incorrect drug, incorrect dose, missing

dose, incorrect frequency, missing frequency, previously stopped medication or duplicate medication.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 1-185

Poster Title: Implementation of Chronic Obstructive Pulmonary Disease (COPD) Medication Management by a Pharmacist within a Shared Medical Appointment

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Additional Author (s):
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Lakshmi Singh

Purpose: COPD causes significant morbidity and mortality. Guideline-based inhaler regimens can reduce symptoms, exacerbations, and hospitalizations. Studies have shown most patients are non-adherent to maintenance inhalers. At the VA Maryland Health Care System, an existing pharmacist managed COPD education group clinic provides disease state and inhaler education for veterans with COPD. This group clinic covers COPD pathophysiology, pharmacotherapy and exacerbations, and provides individualized inhaler teaching. No medication management services are provided. The purpose of this project is to describe the expansion of the COPD group clinic into a shared medical appointment (SMA) that includes COPD medication management by a clinical pharmacist.

Methods: Under the supervision of a clinical pharmacy specialist with an advanced scope of practice that includes prescriptive authority, PGY2 ambulatory care pharmacy residents will provide COPD medication management services within a SMA to ensure each patient is receiving an individualized, evidence-based inhaler regimen. Nicotine replacement therapy may also be prescribed for smoking cessation. The group discussion and education as well as individualized inhaler teaching that comprise the existing COPD group clinic will remain. Patients are eligible for participation in the SMA if they have a diagnosis of COPD and are prescribed at least one inhaler. All patients in the group are eligible for medication management services unless they are followed by a pulmonary specialist for COPD or another lung condition. The SMA will consist of two monthly sessions each lasting two hours with up to eight veterans scheduled per session. Each session will begin with group discussion and education. During the latter half of each session, patients will be seen individually for inhaler teaching and medication management. A separate clinic will be created that will allow for one-on-one follow-up appointments with the pharmacist following the final session of the SMA. A

voluntary patient survey will be administered to assess patient satisfaction and identify strengths and weaknesses of the SMA. Review by an institutional review board will not be required for this descriptive report in progress.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-186

Poster Title: Characterize and Evaluate Treatments for Second and Subsequent Recurrences of Clostridium difficile Infections in a Veteran Population

Primary Author: Aparna Nanduri, VA Maryland Health Care System, MD; **Email:** aparna.nanduri@va.gov

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Purpose: Clostridium difficile infection (CDI) accounts for a significant number of hospital-associated gastrointestinal illness. Recurrence occurs in 10-20 percent of patients with CDI, and rates of further recurrence increases to 40-65 percent. Guidelines specify treatment for initial infection and first recurrence. Guidelines then recommend treating second and subsequent recurrences with a pulsed and/or tapered oral vancomycin regimen but do not have recommendations on specific regimens. Fidaxomicin is another antibiotic approved for CDI, clinically used for multiple recurrences. The study's purpose is to characterize regimens and compare recurrence rates across treatments for second and subsequent recurrences of CDI at the VAMHCS.

Methods: A retrospective chart review will be performed. All patients at the VAMHCS with a positive C. difficile PCR test from January 2012-September 2016 will be included. These patients will then be screened to exclude all patients who do not have a second or subsequent recurrence of CDI. Additional exclusion criteria include patients started on a vancomycin taper at a private facility and patients who passed away during the data collection period. An initial CDI infection is defined as a positive C. difficile PCR result or signs and/or symptoms of infection, and no documented need for treatment of CDI 90 days prior to positive result. Recurrence is defined as documented need for treatment of CDI up to 90 from the last day of prior CDI treatment. The primary objective is to characterize the pharmacologic regimens prescribed at the VAMHCS for second and subsequent recurrences of CDI. The secondary objective is to compare recurrence rates across pharmacologic regimens prescribed at the VAMHCS for second and subsequent recurrences of CDI. Data collection includes age, gender, and ethnicity, location of care, number of prior recurrences, severity, treatment regimen (drug,

dose, route, frequency, and duration), additional concomitant medications for CDI, treatment for prior CDI, and antibiotics for concurrent infections. IRB approval at the VAMHCS is pending. The primary endpoint will be analyzed using descriptive statistics and secondary endpoint using chi-square.

Results: N/A

Conclusion: N/A

Submission Category: Preceptor Skills

Submission Type: Descriptive Report

Session-Board Number: 1-187

Poster Title: Implementation of a physical examination course utilizing patient simulation technology for ambulatory care clinical pharmacy specialists at a Veteran's Affairs Hospital

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Purpose: Within the Veterans' Affairs Maryland Health Care System , Ambulatory Care Clinical Pharmacy Specialists act under a scope of practice to provide direct patient care. The ability to perform accurate and pertinent physical examinations, and subsequently document the findings appropriately, are key components for clinical pharmacists providing this enhanced level of care. The purpose of this project is to design and implement a physical assessment training course utilizing patient simulation technology in an effort to aid ambulatory care clinical pharmacy specialists in enhancing their skills in performing and documenting physical examinations.

Methods: A voluntary interest survey administered to all VAMHCS Ambulatory Care Clinical Pharmacy Specialists (CPS) will be used to develop a curriculum tailored to needs and practice of those CPS's. The physical examination curriculum will include a mix of didactic and simulation lab education delivered over a series of three, three -hour sessions. The didactic portion of each session will include: pre-session, guided reading activities from the Bates' Guide to Physical Examination and History Taking textbook. The first hour of each session will include a group didactic portion to review key concepts found in the readings. The remaining hours of each session will be used for hands-on physical examination practice utilizing patient simulation technology. Body systems covered in this course will include: vital signs, respiratory, cardiovascular, peripheral vascular and dermatologic. The final session will include a formal physical examination skills assessment utilizing a simulated patient case. Prior to the first session, two surveys will be administered to assess participants' perceived barriers to performing physical examinations as well as their confidence in performing physical examinations. Immediately following session 3, the confidence survey will be re-administered

to assess for any change in participants' confidence in their physical examination skills. Four weeks following course completion, a survey will be administered to participants to assess the impact of the course on patient care and individual practice.

Results: Service development and implementation are currently in progress. To date, the results for the general interest survey have been compiled. The survey was sent to fifteen individual Ambulatory care clinical pharmacists, nine of which replied. The most common areas of interest were the cardiovascular system, peripheral vascular system, respiratory system and hair, skin and nails.

Conclusion: N/a

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-188

Poster Title: Prazosin prescribing patterns for veterans with posttraumatic stress disorder (PTSD) at the Veterans Affairs Maryland Health Care System (VAMHCS)

Primary Author: Deanna Bauerlein, Veterans Affairs Maryland Health Care System, MD; **Email:** deanna.bauerlein@va.gov

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Purpose: Prazosin is recommended as a first-line treatment for sleep disturbances in PTSD because it blocks excessive norepinephrine that produces these symptoms. However, a recent study using national administrative VA data to analyze prazosin use in PTSD patients suggests that prazosin is commonly underdosed (< 6mg/day) and/or discontinued early (< 1 year). The primary objective of this study is to characterize prazosin prescribing patterns for the treatment of PTSD-related sleep disturbances in the VAMHCS. The secondary objective is to identify the clinical factors driving early discontinuation and/or underdosing of prazosin.

Methods: This retrospective chart review will be submitted to the Institutional Review Board for approval. Patients who obtained their index prescription for prazosin in 2014 and had a diagnosis of PTSD will be included. The following data will be collected: patient demographics, use of antihypertensive(s) at baseline, history of substance abuse, diagnosis of benign prostatic hyperplasia, prazosin start date, prazosin initial dose, maximum prazosin dose (within one year of start date), time to maximum prazosin dose, prazosin last fill date and/or discontinuation date (up to one year after start date), setting of initial prescription (inpatient or outpatient), and prescribers' credentials and practice setting. Medical records will be reviewed to determine the reason for discontinuation and/or underdosing. The following will be calculated: mean maximum prazosin dose, mean duration of prazosin use, mean time to maximum dose, percentage of patients with early discontinuations, and percentage of patients achieving a dose of 6mg/day or greater. Reasons for discontinuing and underdosing prazosin will be reported.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 1-189

Poster Title: ASHP Midyear Poster Abstract: Research-In-Progress

Primary Author: Stephanie Grant, VA Maine Healthcare System, ME; **Email:** stephanie.grant@va.gov

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Purpose: The Heritage Health Solutions program is a voucher system that allows veterans to have short-term prescriptions for emergency medications filled at non-VA pharmacies when geographical challenges would otherwise prevent same-day access. Over the last several years, utilization of the program has increased exponentially. Vouchers are being distributed for non-emergent medications, as well as to patients who have continually failed to request refills for their maintenance medications or who have missed appointments. This project seeks to empower patients to proactively manage their healthcare, as well as to establish guidelines for the appropriate use of the program.

Methods: The project will be divided into three phases. The first phase will be data collection. Overall cost per quarter, number of prescriptions, types of medications, day's supply provided, and individual provider utilization will be analyzed. From this data, the three highest utilization community-based outpatient clinics (CBOC) will be identified. During phase two, all- staff presentations will be given at each high-utilization clinic to encourage patient education surrounding the medication refill process, as well as on the appropriate use of the vouchers. Education on the process to request expedited medication delivery will also be provided. Phase three will focus on quality improvement and data analysis. Three to six months after the interventions, overall cost per quarter, number of prescriptions, types of medications, day's supply provided, and individual provider utilization data will be compared to baseline data. Strategies will be devised to maintain any gains achieved in phase two. These strategies may include new provider voucher training programs and periodic utilization reviews and interventions.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 1-190

Poster Title: Medication Use Evaluation for Chronic Use of Direct Oral Anticoagulants at VA Maine Healthcare System

Primary Author: Sarah Howard, VA Maine Healthcare System, ME; **Email:** sarah.leonido@gmail.com

Additional Author (s):
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Purpose: At VA Maine Healthcare System, direct oral anticoagulants (DOACs) require non-formulary approval by the pharmacist-run anticoagulation clinic (ACC). If approved, initiation and the first three months of therapy are managed and monitored by ACC pharmacists, after which the responsibility is resumed by the Veteran's primary care provider within the VA. The purpose of this medication use evaluation (MUE) is to evaluate the ongoing use and monitoring of apixaban, rivaroxaban and dabigatran at VA Maine Healthcare System. This project aims to assess if current monitoring practices comply with local and national criteria for use after patients are discharged from pharmacy follow-up.

Methods: A retrospective chart review will be conducted for this MUE. Veterans with active prescriptions for DOACs will be included in the final report. Information to be collected includes: indication for use, concomitant aspirin or diltiazem use, and clinical lab parameters including height, weight, BMI, hemoglobin, platelets, renal function, and hepatic function. Upon completion of data collection, results will be presented to the ACC team to identify opportunities for quality improvement initiatives among the ACC clinic.

Results: Results in progress - will be presented at Midyear Clinical Meeting

Conclusion: Results in progress - will be presented at Midyear Clinical Meeting

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-191

Poster Title: Olanzapine use and monitoring in patients with a body mass index (BMI) greater than 30 at VA Maine

Primary Author: Brett Glasheen, VA Maine Healthcare System, ME; **Email:** brett.glasheen@va.gov

Additional Author (s):
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Purpose: The main goal of the Psychotropic Drug Safety Initiative (PDSI) is to improve safety in Veterans taking psychotropic medications. The use of olanzapine in obese Veterans was identified as a metric by the PDSI. At VA Maine, the percentage of obese patients prescribed olanzapine is significantly higher than the national VA average. The purpose of this project is to use data highlighted by the PDSI to identify specific areas for, and guide clinical pharmacist intervention to improve patient safety.

Methods: Data collection for this quality assurance project will be done through retrospective chart review using the Computerized Patient Record System of Veteran's identified as being obese (BMI greater than 30) with an active outpatient prescription for olanzapine. The data collected on these patients will be used to determine if appropriate metabolic monitoring is being completed and if olanzapine is being prescribed judiciously in patients at high risk of metabolic side effects. Specific information will be collected to assess adherence to the American Psychological Association/American Diabetes Association guidelines on metabolic monitoring of atypical antipsychotics as well as local VA guidelines. Data obtained will include BMI (at baseline, at 4, 8 and 12 weeks, and current), hemoglobin A1c (baseline and current), lipids (baseline and current), ordering provider of labs, if VA clinical reminders for atypical antipsychotic metabolic monitoring and obesity (exercise referral) have been completed, previous antipsychotic trials, and indication for olanzapine. This information will be used to identify potential areas for academic detailing, guide local formulary decisions, and identify opportunities for direct clinical pharmacist intervention.

Results: N/A

Conclusion: N/A

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-192

Poster Title: Evaluation of the impact of a pharmacist lead opioid overdose and naloxone distribution (OEND) patient education group at VA Maine: A rural healthcare setting

Primary Author: Emily Stoukides, VA Maine Healthcare System, ME; **Email:** emily.stoukides@va.gov

Additional Author (s):
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Purpose: Opioid overdose rates nationally, and specifically in Maine have increased in recent years. Naloxone is an opioid receptor antagonist that is available as injectable and nasal formulations that can be used to reverse an opioid overdose. Based on the current efforts of the OEND academic detailing initiative, naloxone prescription rates at VA Maine have increased, but remain lower than other VA locations in the northeast. This project will complement the efforts of the OEND academic detailing initiative by adding educational opportunities for Veterans and their caregivers about overdoses, and increase access to naloxone for Veterans.

Methods: Prior to beginning the group education, data on the number of naloxone kits that have been distributed at VA Maine will be collected from the VA OEND risk dashboard, an online database containing information about the progress of OEND interventions at the VA, including total number of kits prescribed, and specialty and main location of prescribing providers. Then, pharmacist-lead group education will begin for Veterans referred to naloxone education by consult, or may be identified through VA accessible risk reports. The education session will consist of information about naloxone, risks and identification of overdose, administering naloxone, and methods of reduction of overdose risk. At the completion of group education, patients will be prescribed naloxone kits as the pharmacist/pharmacy resident determines to be appropriate. The group will made mainly available at the main hospital campus, however may be made available at other clinics as needed. As the group continues, the number of naloxone kits distributed to patients at VA Maine will be reassessed to determine if the addition of pharmacist lead education improves naloxone distribution rates.

Results: n/a

Conclusion: n/a

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-193

Poster Title: Protocol guided ambulatory alcohol detoxification at the Battle Creek Veterans Affairs Medical Center: a quality improvement initiative

Primary Author: Alicia Lopez, Battle Creek VA Medical Center, MI; **Email:** alopez123@su.edu

Additional Author (s):
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Emily Czeck

Purpose: Alcohol is the most common substance of abuse that leads veterans to be admitted for substance use treatment. The majority of patients with alcohol use disorders are identified in the primary care setting. Even though ambulatory alcohol detoxification (detox) has an established place in clinical care, it is consistently underutilized. This project will evaluate current practices and policies related to the ambulatory management of alcohol detox in the veteran population within the Battle Creek Veterans Affairs Medical Center (VAMC) to develop and implement a policy detailing an evidence-based ambulatory alcohol detox protocol to improve veteran care and facility outcomes.

Methods: Veterans who have received ambulatory alcohol detox treatment per current local guidance will be identified through a database search for relevant notes entered in Veteran electronic medical records, from the date of initiation of the current protocol and until the date of initiation of this project. Protocol adherence will be assessed by reviewing identified records for appropriate use of defined procedures. The facility's current ambulatory alcohol detox protocol will be compared to clinical practice guidelines and national directives. An updated, evidence-based protocol for ambulatory alcohol detox will be developed that addresses any gaps in care discovered through the course of this quality improvement initiative. Battle Creek VAMC clinical staff will be educated on the newly developed ambulatory alcohol detox protocol. Effectiveness of this initiative and adherence to the updated protocol will be assessed by reviewing applicable Veteran records for appropriate use of protocol defined notes and orders. Pre- and post-implementation adherence to ambulatory alcohol detox protocols will be compared using descriptive statistics. Based on the results of this comparison a continuous quality improvement plan will be proposed to ensure the sustained clinical relevancy and optimal utilization of the updated protocol.

Results: Forthcoming

Conclusion: Forthcoming

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-195

Poster Title: Length of stay in heart failure patients hospitalized with acute exacerbations of chronic obstructive pulmonary disease treated with beta-blockers

Primary Author: Jennifer Froomkin, Detroit Medical Center, MI; **Email:** jfroomki@dmc.org

Additional Author (s):
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Mark Pangrazzi
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Purpose: Although current literature has shown the benefit and safety of cardioselective beta-blockers in patients with chronic obstructive pulmonary disease (COPD), including those with concomitant heart failure with reduced ejection fraction (HFrEF), there is a paucity of data surrounding hospital length of stay for COPD. It is pertinent to evaluate the length of stay for patients with HFrEF on metoprolol or carvedilol admitted with a COPD exacerbation and on home oxygen therapy. Determining if beta-blocker cardioselectivity impacts this specific patient population could lead to better drug selection, cost savings, and improved outcomes.

Methods: This single-center, retrospective, observational study has been submitted to the Institutional Review Board for approval. The Detroit Medical Center (DMC) electronic medical record (EMR) will be utilized to identify and obtain a sample of adult patients 40 years of age and older over a two-year period admitted for at least 48 hours to non-intensive care unit (ICU) medical services at Sinai-Grace Hospital who have a primary diagnosis of acute exacerbation of COPD on admission as well as a past medical history of HFrEF and home oxygen therapy. The following data will be collected: age, sex, left ventricular ejection fraction, chest x-ray results, bicarbonate and/or arterial blood gas carbon dioxide levels, total steroid doses administered (standardized to prednisone-equivalents), total inpatient days of steroids, discharge prescription for chronic steroids, total days of antibiotic use, doses of metoprolol tartrate and succinate and carvedilol, and non-invasive bilevel positive airway pressure requirement.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-196

Poster Title: Impact of a pharmacist-led cardiology pharmacotherapy clinic on chronic heart failure management

Primary Author: Joy Hoffman, VA Ann Arbor Healthcare System, MI; **Email:** joy.hoffman2@va.gov

Additional Author (s):
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Scott Hummel
Allison Brenner

Purpose: Heart failure (HF) is a chronic disease that is expected to impact a growing population in the United States. Management of heart failure reduced ejection fraction (HFrEF) includes therapies that can provide mortality benefit, reduce hospitalizations, and increase symptomatic relief. The purpose of this retrospective chart review is to identify the impact of a pharmacist-run cardiology pharmacotherapy clinic versus a general cardiology clinic on medication titration and patient outcomes during chronic HF management in a Veterans Affairs (VA) healthcare system.

Methods: This study has been submitted to the Institutional Review Board for approval. Patients with HFrEF (ejection fraction 40 percent or less) who are New York Heart Association Functional Class II – IV and enrolled in either the general cardiology or pharmacotherapy clinic will be included. Exclusion criteria will be defined as terminal illness, severe cognitive impairment, non-VA cardiology care, use of an investigational drug, residence at a nursing home or skilled nursing facility, hospitalization in the last month, and less than six months of follow-up. Baseline characteristics will be collected, and patients will be stratified according to the Heart Failure Patient Severity Index (HFPSI). The study will be powered to detect a difference in non-fatal HF events between clinics, which will be defined as emergency department visits or hospital admissions for HF exacerbation. In addition, titration of angiotensin-converting enzyme inhibitors, angiotensin II receptor blockers, and beta-blockers to target doses as well as prescribing rates of aldosterone antagonists will be compared. Secondary outcomes will include time to all-cause mortality; time to first lab after medication initiation or titration; use of adjunct therapies including digoxin, diuretics, and

hydralazine/isosorbide dinitrate; medication adherence; and number of HF medication changes per visit. Safety endpoints will include angioedema, gynecomastia, symptomatic hypotension, syncope, renal dysfunction or impairment, hyperkalemia, asthma, chronic obstructive pulmonary disease, bradycardia, atrioventricular node block, and pacemaker implantation.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 1-197

Poster Title: Preadmission beta-blocker in critically ill septic patients: Effects on post-discharge mortality in a veteran population

Primary Author: Kelsey Norman, VA Ann Arbor Healthcare System, MI; **Email:** kelsey.norman@va.gov

Additional Author (s):
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Purpose: Outpatient use of beta-blockers prior to all cause intensive care hospitalization has shown a reduction in 30-day mortality rates post-discharge in the Danish National Patient Registry. Use prior to intensive care hospitalization for sepsis has also shown reduction in 28-day mortality rates post-discharge in an Italian population. Currently, there is a lack of literature to provide evidence that the benefit of beta-blockers detected at a month post-discharge persists. The present study will compare the mortality rates in patients admitted to the ICU with a diagnosis of sepsis with preadmission beta-blocker use versus patients without preadmission beta-blocker use.

Methods: This study is a retrospective cohort study of all patients admitted to an intensive care unit at a VA medical center with a diagnosis of sepsis between January 1, 2014 and January 1, 2016 utilizing the national VA database. The study group is defined as patients with preadmission beta-blocker use, defined as at least 1 refill of a beta-blocker medication within 30 – 120 days prior to admission. The control group will be patients without preadmission beta-blocker use. Baseline patient information that will be collected includes age, gender, height, weight, and comorbidities. Hospital admission data that will be collected include source of sepsis, positive culture growth, IV beta-blocker administration, IV vasopressor administration, blood pressure, respiratory rate, mental status, blood lactate, serum creatinine, and liver function tests. Outpatient medication history will also be assessed for use of a beta-blocker preadmission and post-discharge. Specific beta-blocker agents identified during chart review will be recorded and reported. The primary endpoint is to compare the rate of 30-day and 90-day mortality between patients admitted to the ICU with preadmission beta-blocker therapy versus those whom were not. The secondary endpoints are to compare the rate of 30-day and

90-day mortality between patients based on type of preadmission beta-blocker and source of sepsis.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 1-198

Poster Title: Impact of emergency department pharmacy services on the time to administration of antibiotics

Primary Author: Abigail Ellis, Veterans Affairs Ann Arbor Healthcare System, MI; **Email:** abigail.ellis@va.gov

Additional Author (s):
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Andrew Siler

Purpose: Implementation of an emergency department (ED) pharmacy service may decrease time to administration of antibiotics. Timely administration of antibiotics has been shown to improve outcomes in patients with severe infections such as sepsis, and subsequently antibiotics are recommended within one hour of diagnosis of septic shock and severe sepsis. The impact of the time to first dose in other infections, however, is unclear. Therefore, the purpose of this study is first to evaluate an ED pharmacy service's impact on time to administration of antibiotics at a Veterans Affairs (VA) ED, and to then identify any potential impact on patient outcomes.

Methods: A retrospective chart review of time to administration of antibiotics in a VA ED will be conducted, evaluating patients treated with and without the presence of an ED pharmacy service. Patients receiving at least one dose of an antibiotic in the ED will be included, and the timeliness of antibiotic administration will be compared for two equivalent timeframes, one before and the other after the introduction of ED pharmacy services. Patient outcomes to be assessed will include; total length of antibiotic therapy, length of hospital stay, 90-day hospital readmission rates related to the principle diagnosis, and 90-day mortality. Appropriateness of antibiotic dosing will be determined based on pre-specified ranges in accordance with current clinical guidelines and institutional practices. Other demographic data to be collected includes: patient age, gender, weight, renal function, antibiotic and dose administered, time of order entry by physician, time of administration, and diagnosis (ICD9/10 codes). Patients will be excluded if they are discharged home directly from the ED or were transferred to or from another institution.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-199

Poster Title: Characterizing Naloxone Distribution at the Minneapolis Veterans Affairs Health Care System (VAHCS)

Primary Author: Ashley Lane, Minneapolis Veterans Affairs Health Care System, MN; **Email:** ashley.lane3@va.gov

Additional Author (s):
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Purpose: Naloxone is a medication intended to be used as a reversal agent during a life threatening opioid overdose. Despite the effectiveness as a reversal agent, use of naloxone as a risk-mitigation strategy remains low within the Minneapolis VAHCS. Opioid initiatives within the Veterans Health Administration (VHA) have made it a focus to educate Veterans about opioid use, opioid overdose, and opioid rescue medication. The Minneapolis VAHCS opioid initiatives strive to reduce life threatening opioid related overdose deaths among Veterans. The objective of this study is to characterize naloxone prescribing before and after Minneapolis VAHCS expansion of opioid education initiatives.

Methods: Conducted a retrospective chart review of approximately 160 patients dispensed a naloxone prescription during a pre-education period July 1, 2015 to July 1, 2016 and a post-education period October 1, 2016 to December 1, 2016. Patients excluded from the chart review included any patient on chronic opioids for cancer pain or palliative care and patients who did not have an active opioid prescription at the time naloxone was dispensed. Opioid overdose risk-related data collected included history of overdose, substance use disorder, morphine equivalent dose of 50mg or greater and concomitant use with benzodiazepines. These data align with guidance from the 2016 CDC Guideline for Prescribing Opioids for Chronic Pain on who to offer naloxone. Naloxone prescriptions were assessed to determine whether they met CDC Guideline recommendations for use. Additional data collected included: patient age, gender, provider name, provider clinic location, and provider practice area. The data will be characterized to ascertain if outreach opportunities to promote naloxone distribution are

needed in a particular location of the health care system (community clinic vs medical service, rural vs. urban) or needed in a particular practice setting (mental health vs primary care). Additionally, data will be evaluated to determine if certain risk groups (e.g. individuals concomitantly prescribed benzodiazepines) should be targeted for further education to minimize opioid-related harms.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-200

Poster Title: Evaluation of benzodiazepine use for outpatient insomnia treatment at the Minneapolis Veterans Affairs Health Care System.

Primary Author: Martin Bloch, Minneapolis Veterans Affairs Health Care System, MN; **Email:** martin.bloch@va.gov

Additional Author (s):
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Elzie Jones
Tessa Kemp
Kara Wong

Purpose: Benzodiazepines have been identified as high-risk medications, particularly in patients with specific risk factors (older age, high dose, concurrent opioid use, etc.). Recent insomnia guidelines propose that use of sedative hypnotics should be limited to five weeks or less, if at all. The purpose of this medication use evaluation is to determine the appropriateness of benzodiazepine use for outpatient insomnia treatment, as well as the proportion of veterans at increased risk of benzodiazepine adverse effects.

Methods: A site-specific pharmacotherapy dashboard for insomnia treatment will be used to identify “actionable patients”: veterans prescribed benzodiazepines for insomnia, veterans on chronic benzodiazepine regimens for sleep, and veterans taking benzodiazepines above recommended doses. The dashboard includes patient demographic information, an insomnia medication history from the past five years, and patient-specific risk factors related to benzodiazepine use (sleep apnea; active CNS depressant; dementia; age greater than 74; diagnosis of posttraumatic stress disorder, substance use disorder, or traumatic brain injury). History of falls and use of cognitive behavior therapy for insomnia will be extracted from the electronic medical record. The data collected will be used to describe current prescribing patterns and to guide updates to outpatient insomnia order sets. This medication use evaluation will not require IRB approval, as it will not meet the definition of research.

Results: NA

Conclusion: NA

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-201

Poster Title: Assessment of inpatient fluoroquinolone utilization at the Minneapolis Veterans Affairs Health Care System

Primary Author: Randa Fahim, Minneapolis Veterans Affairs Health Care System, MN; **Email:** randa.fahim@va.gov

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Lauren Estkowski

Purpose: The FDA recently strengthened the existing statement regarding fluoroquinolone use and associated safety risks to state that fluoroquinolones, when used to treat uncomplicated infections such as acute sinusitis, acute bacterial exacerbations of bronchitis, and uncomplicated urinary tract infections, should be reserved only for patients without other antibiotic treatment options. Disabling adverse effects may involve the tendons, muscles, joints, nerves and central nervous system. This safety concern, in addition to increasing antimicrobial resistance, further supports the need to decrease unnecessary fluoroquinolone use. A better understanding of fluoroquinolone prescribing patterns will allow for identification of areas for targeted intervention within our facility.

Methods: An electronically generated report will identify patients who received at least two doses of a systemic fluoroquinolone (ciprofloxacin, levofloxacin, or moxifloxacin) while admitted to an inpatient hospital unit between January 1, 2016 and September 1, 2016. The following data points will be collected for 100 randomly selected patients: patient name, age, weight and BMI, height, serum creatinine, documented drug allergies, medication name, dose, route (intravenous or oral), indication/diagnosis, dates of administration and hospital ward to which the patient was admitted. A random subset of 50 patients will be selected for more extensive chart review to gather the following information: correlation of antibiotic selection with current treatment guidelines and the health system antibiotic ordering system, availability of culture and susceptibility data and its correlation with drug selection, availability of alternative treatment options, and when available, reasoning for using a fluoroquinolone when other treatment options existed. This information will be compiled and patterns assessed to further determine potential areas for interventions to improve antibiotic order selection and optimize overall fluoroquinolone use.

Results: In progress

Conclusion: In progess

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-202

Poster Title: Evaluation of most commonly prescribed medications, disease states, and admission diagnoses in veterans admitted to facilities outside the Minneapolis Veteran Affairs Health Care System

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Purpose: A Community Care nursing team was previously established at the study site with the intent to transition veterans back into the study site's system after discharge from an outside facility. The purpose of this study was to assess the most commonly prescribed medications, disease states, and admission diagnoses trends for patients admitted to outside facilities while still actively receiving care at the study site.

Methods: This study is a retrospective chart review of patients receiving transitional care coordination via the Community Care nursing team. Patients were identified in the electronic medical record based on the presence of a "Community Care RN Case Manager Note" in the selected time frame of June 1, 2016 to August 31, 2016 (N=568). After identifying appropriate patients, the following data was collected: patient name, last 4 of their social security number, gender, date of birth, age, assigned primary care physician, assigned primary care clinic, active outpatient medication orders, and all diagnosis codes (ICD-9 and ICD-10). All medications were categorized in two ways: a treatment group and by mechanism of action. For example: metformin, insulin, and glipizide would be assigned the same treatment group (Diabetes), but would be further classified by their individual mechanisms. All diagnosis codes were grouped based on core diagnostic cause (e.g. Type 2 Diabetes Mellitus without Complications and Type 2 Diabetes Mellitus with Hyperglycemia were assigned the group Diabetes). Of the eligible patients, 100 were randomly selected for chart review and primary diagnosis upon admission to outside facility was assessed. The information collected will be used to identify the most commonly prescribed outpatient medications by name, treatment group, and mechanism of

action. The results of this study will be used to establish pharmacist-led Medication Therapy Management in the Community Care team.

Results: In progress.

Conclusion: In progress.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-203

Poster Title: Use of Guideline-Directed Medical Therapies for Heart Failure Reduced Ejection Fraction (HFrEF) at the Minneapolis Veterans Affairs Medical Center (MVAMC)

Primary Author: Travis Liebhard, Minneapolis Veterans Affairs Health Care System, MN; **Email:** travis.liebhard@va.gov

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Purpose: Heart failure (HF) is a complex disease that is known for frequent hospitalizations and high mortality. Current pharmacologic therapies that reduce morbidity and mortality are effective in stage C HFrEF patients. These agents include angiotensin-converting enzyme inhibitors (ACEi), angiotensin-receptor blockers (ARBs), beta blockers (BBs), aldosterone antagonists (AAs), hydralazine-isosorbide dinitrate, and sacubitril-valsartan, which are titrated to doses effective in clinical trials. If symptoms persist despite reaching target doses, digoxin and ivabradine may be considered next as they have also been shown to reduce morbidity. The purpose of research is to evaluate use of these drugs in clinical practice at our institution.

Methods: An informatics pharmacist will identify patients who meet the inclusion criteria through the computerized patient record system (CPRS) at our institution. Patients will be included if they have primary care established at our institution, have an ICD 9 or 10 diagnosis code for systolic heart failure, and were seen between September 2014 to September 2016. Patients will be excluded if they passed away, are currently consulted for palliative or hospice care, or are co-managed (defined by receiving HF medications from another pharmacy). This cohort will then be analyzed based on use of ACEi, ARBs, BBs, AAs, hydralazine-isosorbide dinitrate, sacubitril-valsartan, ivabradine, and digoxin. Analysis will include total number of patients on each therapy, percent of patients on each drug class, and percentage of patients at target doses. Additional analysis will be performed on patients with at least one admission between September 2014 to September 2016 for any admission diagnosis, primary diagnosis related to HF, or secondary diagnosis related to HF. Additionally, a chart review will be performed on 200 random patients from the above cohort to determine why patients are not

taking or have not reached target doses of ACEi, ARBs, and/or BBs. This medication use evaluation will not require IRB approval.

Results: In progress

Conclusion: In progress

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 1-204

Poster Title: Improving access to behavioral health services in rural communities: An innovative pharmacist collaborative practice model.

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Purpose: In the United States, one in five adults experiences a mental illness. The prevalence of behavioral health conditions is significantly higher in rural communities due to behavioral health specialty provider shortages. In one American Indian community in rural Minnesota, there are currently no full-time licensed psychiatrists or midlevel practitioners. Rather, primary care providers must manage psychotropic medications. A collaborative practice model for clinical pharmacists was developed to meet the increasing demand for behavioral health services within the community and assist primary care physicians with both assessment and medication optimization.

Methods: There were three main elements to establishing the clinic: credentialing and training clinical pharmacists to manage behavioral health conditions, developing a collaborative practice agreement, and identifying appropriate methods for pharmacy reimbursement. At this Indian Health Service facility, clinical pharmacists are credentialed and privileged members of the medical staff. Two pharmacists and one pharmacy practice resident were credentialed to practice within a behavioral health clinic by participating in a specialized training developed through a novel collaboration between the Indian Health Service facility and a local pharmacy school. This training ensured clinical pharmacists were knowledgeable in behavioral health assessment and medication management. A memorandum of understanding between the two entities afforded clinical pharmacists the opportunity to learn from two Board Certified Psychiatric Pharmacists, one of whom was faculty at the pharmacy school. The training involved a series of experiential learning opportunities, case discussions, and self-study. The two pharmacists and one pharmacy practice resident who participated in this program developed a collaborative practice agreement with the facility's medical staff to grant pharmacists the

autonomy to appropriately care for patients who were referred to the service. To ensure a sustainable practice model, a system for patient referral to the pharmacy service was identified and behavioral health pharmacists began generating revenue using current procedural terminology billing codes.

Results: The training program developed by this Indian Health Service facility and pharmacy school involved pharmacists' self-study of board certification materials, four hours of behavioral health focused case-based discussions, and twenty-four direct observation hours with a board certified pharmacist in an urban clinical pharmacy practice. The psychiatric pharmacists served as expert resources for complex patient cases. The collaborative practice agreement allowed credentialed pharmacists to assess and treat chronic behavioral health conditions such as depression, anxiety, post-traumatic stress disorder, schizophrenia, bipolar disorder, and tobacco abuse disorder. After assessment, pharmacists could initiate, change, or discontinue psychotropic medications, and order appropriate labs to ensure safety of medications. Pharmacists could refer patients to behavioral health counseling services as necessary. Outcomes identified to track were percentage of patients routinely screened for depression, improvement from baseline in widely accepted behavioral health assessment tools, and patients with tobacco abuse as concurrent diagnosis. Referrals to this behavioral health program could be generated from psychologists, social workers, primary care providers and other pharmacists. Services were billable using current procedural terminology codes for evaluation and management of an established patient with a problem-focused history and examination with straightforward medical decision-making.

Conclusion: With specialized training, an appropriate collaborative practice model, and revenue generation, clinical pharmacists in rural areas can manage behavioral health conditions in the same way they manage other chronic disease states. In the future, the Indian Health Service facility will explore utilizing advanced pharmacy technicians in behavioral health case management roles, and explore avenues for creation of an interactive web-based resource for behavioral health care professionals in rural areas, similar to an Extension for Community Healthcare Outcomes model. Through these initiatives, pharmacy staff in rural areas can positively impact the behavioral health of their patients.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 1-205

Poster Title: Incidence of steroid-induced hyperglycemia in non-diabetic veterans admitted to the intensive care unit at G.V. (Sonny) Montgomery VA Medical Center

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Additional Author (s):
Angela Hamilton

Purpose: Hyperglycemia is a commonly seen phenomenon in the intensive care unit (ICU). It has been demonstrated that the rise in serum glucose in critically ill patients is associated with increased morbidity and mortality. Corticosteroids are known to cause an increase in serum glucose levels and are utilized for a variety of conditions in the ICU. Currently, there is limited data on the epidemiology of steroid-induced hyperglycemia in non-diabetic ICU patients. The objective of this study is to determine the incidence, prevalence, and potential risk factors for steroid-induced hyperglycemia in non-diabetic Veterans admitted to the ICU.

Methods: This retrospective study has been submitted to the Institutional Review Board for approval. Data will be collected from the Computerized Patient Record System for Veterans who meet the criteria for inclusion. This study will include Veterans admitted to the ICU at G.V. (Sonny) Montgomery VA Medical Center from August 2014 through July 2016 and received systemic steroids for at least 48 hours. Veterans will be excluded if they have any of the following: documented random blood glucose levels greater than or equal to 200 mg/dL in the year prior to admission, a documented A1c of 6.5 percent or greater within two years before admission, systemic steroids within thirty days before admission, a diagnosis of diabetes mellitus, a change in weight of greater than ten percent in one year, a diagnosis of HIV or cancer, pregnant or lactating, or received other medications that can increase glucose levels. The following data will be collected for each patient: age, weight, gender, race, baseline A1c, glucose levels during systemic steroid therapy, indication for steroids, duration of steroid use, daily prednisone equivalent received, length of ICU stay, reason for ICU admission, APACHE II score, estimated creatinine clearance, and if insulin was received while on systemic steroids and how much. Descriptive statistics, the Chi-squared test, and the Fisher's exact test will be used to analyze the data of this study.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-206

Poster Title: Evaluation of empiric outpatient antibiotic treatment for urinary tract infections at G.V. (Sonny) Montgomery VA Medical Center

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Purpose: Urinary tract infections (UTIs) are one of the most commonly encountered infections in the outpatient setting. Several published studies have demonstrated that prescribing patterns for uncomplicated UTIs have low concordance with practice guidelines. Antimicrobial resistance patterns and potential adverse effects of antimicrobials may have an impact on the treatment of UTIs. The objective of this study is to evaluate the appropriateness of empiric outpatient treatment for UTIs in male Veterans at G.V. (Sonny) Montgomery VA Medical Center.

Methods: This retrospective study has been submitted to the Institutional Review Board for approval. The study will include a random sample of up to 500 male Veterans who were diagnosed with a UTI, acute cystitis, or unspecified cystitis in the outpatient setting from July 2015 through June 2016. These Veterans will be identified by International Classification of Diseases diagnosis codes. Veterans will be excluded if they were treated in the emergency department or have complicating factors, such as pyelonephritis, acute prostatitis, nephrostomy tube(s), or a chronic foley catheter. The following data will be collected from the Computerized Patient Record System: age, clinic name, urine culture collection, organism(s) isolated from the urine, organism susceptibility results to certain antibiotics, empiric antibiotic selection, treatment duration, susceptibility results of empiric antibiotic prescribed, and any treatment adjustments (antibiotic switch or discontinuation) based on urine culture and susceptibility results. Data will be recorded without patient identifiers and maintained confidentially. Descriptive statistics will be used to analyze the proportion of patients who received appropriate empiric treatment and the proportion of patients who were switched to an appropriate antibiotic or discontinued therapy based on urine culture and susceptibility results.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-207

Poster Title: Pharmacist run diabetes care clinic effects on hemoglobin A1c.

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Purpose: This study hopes to answer the following question, "Will implementation of a new pharmacy run diabetes pharmacotherapy clinic lead to better diabetes outcomes for our veteran patients?" The focus of this project will be on reduction in A1c and trends in patient blood glucose levels as measured during appointments.

Methods: A new diabetes clinic has been established at Gulf Coast Veterans Health Care System (GCVHCS) in Biloxi within the primary care clinic. Patients will be included in this study as long as they have been seen in the pharmacy run diabetes clinic or in the nursing diabetes/primary care clinic for the control group. The clinic has been set up to provide education and evaluation of patients' medications and outcomes. Pharmacists will adjust patient medications under practice agreements at GCVHCS. Clinic procedures include, A1c collection at baseline and every three months if deemed clinically appropriate. A1c and blood glucose trends will be monitored through patient chart review. These results will be compared to a group of patients that are enrolled in a diabetes education group that is run by the nursing staff at GCVHCS to compare outcomes. Data will be collected by doing a chart review of patients who are enrolled in the clinic during the months of August through October, and data will be analyzed for these patients through March 2017, using descriptive statistics to look at overall change in A1c for patients and t-test will be used to compare the two groups. We hypothesize before the start of our data collection that this intervention will lead to an equal or greater decrease in A1c for patients enrolled in the pharmacist run clinic.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-208

Poster Title: Benefits of a clinical pharmacist led outpatient mental health metabolic syndrome monitoring clinic

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Purpose: Multiple studies have shown that pharmacist managed clinics in various fields have improved medication adherence and patients' quality of life. Due to the increase in mental health diagnoses and metabolic syndrome in the military community, the primary objective of this study is to determine if health outcomes improve for veterans taking antipsychotic medications enrolled in the pharmacist metabolic monitoring clinic compared to veterans taking antipsychotics not enrolled in the clinic. The secondary objective is to determine if veterans enrolled in the clinic improved other quality of life risk factors such as increased exercise, improved diet, and reduced alcohol intake/tobacco use.

Methods: This will be a retrospective chart review study. Data will be collected from the new clinical pharmacist led outpatient mental health metabolic syndrome monitoring clinic at Gulf Coast Veterans Healthcare System (GCVHCS). Data collected will include: demographics (age, sex, race, and ethnicity), exercise routine, diet, drinking/tobacco use, name of the current antipsychotic prescribed, the duration they have been on this medication, duration they have been taking any antipsychotic, lipids, HbA1C, fasting blood sugar, waist circumference, blood pressure, weight, and height. Baseline measures will be compared to the 3 and 6 months mark to assess for any changes and to a control group of veterans taking antipsychotics and not enrolled in the clinic. The amount of referrals to the MOVE program, a dietician, and the quit tobacco clinic, and "no-shows" appointments will also be collected. All data will be analyzed through descriptive analysis. Veterans enrolled in the metabolic syndrome monitoring clinic that are taking an antipsychotic will be included in this study and those who were lost to follow up in the clinic will be excluded from the analysis. The primary study outcomes are fasting blood glucose, lipids, waist circumference, and blood pressure control and the secondary

measures include: changes in exercise, smoking/drinking, and diet routines. Success is classified when a subject no longer meets one or more of the metabolic syndrome criteria.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-209

Poster Title: The Impact of Educational Intervention on Utilization of the Prescription Monitoring Program (PMP) in a Community Pharmacy Setting

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Purpose: According to the Centers for Disease Control and Prevention, residents of Mississippi were prescribed more than 3.2 million opioid prescriptions in 2015, the 5th highest rate in the country. Like many states, Mississippi has implemented the Prescription Monitoring Program (PMP) to help identify and prevent prescription drug abuse and diversion. The purpose of this study is to determine if the educational intervention about the PMP increases the number of self-reported interventions made by pharmacists in the community setting.

Methods: This study will be submitted to the University of Mississippi Institutional Review Board for approval. Pharmacists licensed in the state of Mississippi who practice in a community pharmacy setting will be invited to participate. Study enrollees will participate in an educational session regarding the Mississippi PMP. Content of the program will include a description of the PMP, suggestions for when to access the PMP, how to assess for possible misuse or abuse, and recommendations for interventions to identify and prevent opioid abuse and misuse. Prior to the educational session, study participants will complete a pre-survey evaluating knowledge of the PMP, frequency of PMP use, and quantity and type of self-reported interventions. Two months after the educational session, an identical post-survey will be administered to assess the effectiveness of the intervention. The primary outcome is the number of community pharmacist PMP self-reported interventions. Secondary outcomes include change in PMP knowledge parameters, frequency of use, and type of interventions.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-210

Poster Title: Improving diabetes outcomes through pharmacist interventions in an urgent and emergent care setting

Primary Author: Bryan Gunter, Cherokee Indian Hospital Authority, NC; **Email:** bryan.gunter@cherokeehospital.org

Additional Author (s):
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Purpose: Emergency departments and urgent care clinics are often used by patients as their sole access to the healthcare system. For patients with chronic disease states, transitioning and establishing primary care follow-up is crucial for optimal outcomes. In this study, pharmacists will meet with and establish primary care follow-up for out-of-control diabetic patients presenting to the emergency department or urgent care clinic. The objective of this study is to determine if pharmacist interventions in the urgent and emergent care setting leads to improved patient follow-up and clinical outcomes in the primary care setting.

Methods: This study will be conducted at a rural hospital and ambulatory clinic serving a Native American population. This study will compare two intervention groups. Diabetic patients presenting to the emergency department or urgent care clinic will be screened by a provider for out-of-control diabetes defined as either an A1c greater than 9 percent or requiring insulin administration. The provider will contact a clinical pharmacist who will meet with the patient, assess current therapies for diabetes, and establish a follow-up visit with the pharmacist in the primary care setting. Patients presenting after pharmacist hours will be screened by a pharmacist using iCare, an electronic population health tool. A pharmacist will contact the patient to establish care and schedule a primary care appointment. Initial interventions will occur over a 90 day period. Reduction in A1c will serve as the primary endpoint and will be collected at the initial primary care visit and at a 3 month follow-up appointment. Secondary endpoints include medication refill history, appointment attendance, appropriate lipid and renal therapies, and blood pressure control. The percentage of patients lost to follow-up and

patients using urgent and emergent care services as their only care will be calculated. Finally, endpoints will be compared between the two intervention groups to determine if a benefit exists.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-211

Poster Title: Impact of Investigational Drug Service training modules on trainee knowledge and confidence

Primary Author: Sara Britnell, Durham VA Medical Center, NC; **Email:** sara.britnell@va.gov

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Purpose: Investigational drug service pharmacists serve an important role in the coordination of research involving drug products, as there are many unique responsibilities. Investigational drug service pharmacists fulfill many roles in the life cycle of a research protocol, but resources providing practical strategies for successfully managing these roles are lacking. The primary objective of this study is to evaluate the impact on pharmacist knowledge of educational training modules regarding the provision of investigational drug services. Secondarily, this study aims to evaluate the impact of educational training modules on participants' confidence in their ability to develop and maintain an investigational drug service.

Methods: This study is a survey-based questionnaire and educational assessment. Participants will be recruited to participate in the training modules and associated study through the Veterans Affairs Research Pharmacists listserv. Participants will first be directed to complete a survey, which will present a series of questions related to participant demographics and site characteristics. Participants will then be asked to complete a pre-test, which will contain knowledge-based questions and a self-assessment of participant confidence in the provision of investigational drug services. After completing the survey and pre-test, participants will be able to complete four educational modules regarding the provision of investigational drug services. Once the modules are completed, participants will then be instructed to complete a post-test with the same knowledge-based questions and confidence assessments as were included on the pre-test. Upon successful completion of the program, participants will receive 4 hours of continuing education credit. Descriptive statistics will be utilized to compare baseline characteristics and test scores. Changes in pre-test and post-test scores will be analyzed using paired t-test. Where applicable, Wilcoxon-signed rank will be used to compare Likert scale questions between pre-test and post-test.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-212

Poster Title: Evaluation of sofosbuvir-based regimens for the treatment of hepatitis C in patients with decompensated cirrhosis

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Purpose: It is estimated that 2.7-3.9 million Americans are infected with chronic Hepatitis C virus (HCV). Prior to the introduction of direct acting antivirals, patients with decompensated cirrhosis had limited treatment options. The AASLD-IDSA guidelines recommend four different sofosbuvir (SOF)-based regimens for treatment of HCV in patients with decompensated cirrhosis. However, there is still limited data evaluating the use of these medications in this population. The purpose of this study is to assess the efficacy and safety of SOF-based regimens for treatment of HCV in patients with decompensated cirrhosis within the Veteran Affairs (VA) healthcare system.

Methods: This study is a retrospective chart review evaluating VA patients with chronic HCV and decompensated cirrhosis who have completed and received HCV treatment with a SOF-based regimen through the VA. Patients with decompensated liver disease will be included in the study if they initiated HCV treatment with a SOF-based regimen between October 10, 2014 and December 31, 2015 and completed treatment by June 30, 2016. Patients who have filled prescriptions for SOF or ledipasvir(LDV)/SOF during this time period will be extracted from the National VA Corporate Data Warehouse. ICD 9 and 10 codes for hepatic encephalopathy, ascites, spontaneous bacterial peritonitis, bleeding esophageal varices, and liver cell carcinoma will be utilized to identify patients with decompensated cirrhosis. Presence of decompensated cirrhosis in these patients will be confirmed through manual chart review. Efficacy will be determined using rates of sustained virologic response at least 12 weeks after completion of therapy (SVR12). SVR12 will also be assessed among subgroups based on prior treatment experience and age, as well as concomitant use of proton pump inhibitors at higher than

recommended doses in patients on LDV/SOF. Safety will be assessed using rates of adverse effects and hospital admissions during therapy. Descriptive statistics will be used to assess efficacy and safety data.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 1-213

Poster Title: Evaluation of VTE prophylaxis practices in multiple myeloma patients receiving a lenalidomide-based regimen at the Durham VA Medical Center

Primary Author: Kelly Chillari, Durham VA Medical Center, NC; **Email:** kelly.chillari@gmail.com

Additional Author (s):
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Purpose: With the development and use of newer therapies multiple myeloma has become a chronic disease for many patients. Thus, additional focus has shifted toward mitigating adverse effects from both disease and the associated treatments. Lenalidomide is an immunomodulatory agent (IMiD) routinely utilized for the treatment of multiple myeloma. All IMiDs include a black box warning for arterial and venous thromboembolism (VTE) and multiple practice guidelines recommend VTE prophylaxis for myeloma patients taking IMiD therapy. The purpose of this study is to determine the prescribing rate of medical VTE prophylaxis and documented incidence of clot in multiple myeloma patients receiving lenalidomide.

Methods: The study is a retrospective chart review of patients who received treatment for multiple myeloma with a lenalidomide-based regimen at the Durham VA Medical Center. Subjects will be selected by identifying individuals with an ICD-9 or ICD-10 code for multiple myeloma present between July 1, 2006 and July 1, 2016. They will then be screened for lenalidomide treatment. Data collected from the computerized patient record system will include the following: prophylactic agent prescribed, documented reason for no medical prophylaxis, lenalidomide refill history, duration of therapy, concurrent chemotherapy agents given, dose of dexamethasone, VTE risk factors and documented incidence of VTE or bleeding events. Descriptive statistics will be used to report baseline characteristics and for the evaluation of primary and secondary outcomes. Institutional review board approval is pending.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 1-214

Poster Title: Prescribing Rates of Anti-infective Prophylaxis in Veterans Receiving Bortezomib Therapy

Primary Author: Heather Moore, Durham VA Medical Center, NC; **Email:** heather.moore28@va.gov

Additional Author (s):
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Purpose: The National Comprehensive Cancer Network Guidelines on Prevention and Treatment of Cancer-Related Infections recommends varicella zoster virus (VZV) prophylaxis while on bortezomib and pneumocystis pneumonia (PCP) prophylaxis consideration for intermediate infection risk including multiple myeloma (MM) and lymphoma. This study's primary objective is to determine the prescribing rate of anti-infective prophylaxis in veterans receiving bortezomib therapy. Evaluation of anti-infective agents selected, documented reasons for no prophylaxis, and rates of PCP & VZV infections will also be included.

Methods: The proposed study is a retrospective chart review of patients with multiple myeloma (MM) or mantle cell lymphoma (MCL), who received bortezomib therapy at the Durham Veterans Affairs Medical Center (DVAMC). To be included, patients must be at least 18 years of age and have an order for bortezomib between June 20, 2008 (date of FDA approval of bortezomib) and August 1, 2016. Data regarding time of initiation of anti-infectives will be identified as < 30 days, 30-180 days, and > 180 days from initiation of bortezomib. Prescribing rates will be calculated as percentages: number of patients that received specific therapy divided by the number of patients on bortezomib therapy. Documented reasons for not initiating anti-infective prophylaxis will be identified by utilizing the computerized medical record (CPRS). IRB approval is pending.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-215

Poster Title: Determining the prevalence of potentially inappropriate medication prescribing in older community-dwelling veterans with chronic kidney disease and adverse drug outcomes

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Additional Author (s):
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Purpose: The United States elderly population is rapidly growing. By 2050, the number of individuals over 65 will nearly double to 83.7 million. Over the last several decades, there have been significant advances in medicine. As a result, patients are living longer with chronic diseases. The prevalence of chronic kidney disease in people 60 years of age and older increased from 18.8 percent during 1988 to 1994 up to 24.5 percent in 2003 to 2006. As the life expectancy for older patients with CKD increases, it is essential to review current practice habits to improve patient care and optimize healthcare expenditure.

Methods: A retrospective review of patients managed by a Primary Care Provider or a Nephrologist at the Durham Veterans Affairs Medical Center (VAMC) from January 1, 2015 to December 31, 2015 will be conducted. Customizable computerized reports will be utilized to analyze the prescribing of potentially inappropriate medications (PIMs) to patients who are at least 60 years of age and have diagnosed chronic kidney disease (CKD). As a secondary outcome, adverse drug events including emergency department (ED) visits, hospitalizations, and death will also be collected and compared to individuals without any active PIM prescriptions.
Multiple variables will be collected including patient demographics, appointment information, prescription information, and outcome data. The data collected will be used to evaluate the association between PIM prescribing and 90 day outcomes for patients with CKD. Such outcomes will be compared to the same patient population without an active PIM medication. Descriptive statistics will be used to assess the incidence of PIM prescribing, the number of

active medications, the number of encounters, patient complexity, and the number of unique diagnoses for each encounter. Research is pending IRB approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-216

Poster Title: Incidence of drug interactions identified by clinical pharmacists in Veterans initiating treatment for chronic hepatitis C infection

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Purpose: New Hepatitis C Virus (HCV) direct-acting antivirals (DAAs) have superior cure rates, improved side effects, and shortened treatment duration. Despite improvements, many DAAs have significant drug-drug interactions (DDIs) that can negatively impact efficacy and safety. There is also considerable cost associated with DAAs, further necessitating proactive therapy optimization. Pharmacists can play a key role in optimizing therapy, but there is limited evidence describing the types of interactions encountered in practice. The primary objective of this study is to describe the incidence and severity of DDIs with HCV DAAs identified by the HCV clinical pharmacist at initial screening for HCV therapy.

Methods: This is a retrospective study of Veterans with chronic HCV infection that had an initial prior authorization drug request for HCV DAA therapy between July 15, 2015 and July 14, 2016 at the Durham Veterans Affairs Medical Center. Using data from the electronic medical record, the initial approval note will be assessed. Primary endpoints will include: total number of identified DDIs, number of approval notes with at least one DDI, average number of DDIs per approval note, and number of DDIs by severity category based on University of Liverpool's HEP Drug Interactions Resource. Secondary endpoints will include: number of drugs that interact with DAAs categorized by name and therapeutic class; directionality of interaction; proportion of DDIs expected to result in reduced efficacy of DAA, reduced efficacy of interacting drug, or safety concern; proportion of actionable interventions recommended and proportion of actionable recommendations that did not occur; achievement of sustained virologic response greater than 12 weeks after end of therapy; monetary value of cost avoidance when optimizing

regimen selection; and number of critical DDIs by drug interaction resource (University of Liverpool's HEP Drug Interactions Resource, Lexicomp, Micromedex). Primary and secondary endpoints will be analyzed using descriptive methods including mean, median, and mode.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-217

Poster Title: Overactive bladder medication management: an assessment of drug utilization and potential cost savings opportunities in a Veterans Affairs Medical Center

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Purpose: Veterans Affairs and Department of Defense guidelines currently offer criteria for use for the medication mirabegron, but do not offer clinical guidance on alternative overactive bladder (OAB) medications. No tier-based approach to anticholinergic medication selection currently exists and extended-release oxybutynin is restricted for use locally. Therefore, we seek to investigate current overactive bladder (OAB) medication use within the Fayetteville Veterans Affairs Medical Center (FVAMC) to determine if current prescribing habits align with standard of care practices and to devise a tier-based, cost savings approach to anticholinergic medications.

Methods: Reports were generated identifying all patients with a prescription for an OAB medication originating between 08/01/2015 and 08/01/2016. Refills from prescriptions that originated outside of this timeframe were excluded . Composite of overall potential cost savings opportunities served as the primary endpoint. Current dispensation costs per unit were compared against actual real-time prices from both FVAMC medication vendors to determine the accuracy of current local pricing. Differences in pricing were compared against total quantities dispensed for included medication fills to determine overall cost savings potential. Formulary utilization was assessed in an effort to identify areas of improvement within FVAMC. Prescribing trends were compared with current recommendations for anticholinergic medications from the American Geriatrics Society Beers Criteria for potentially inappropriate medication use in older adults. Secondary endpoints included rates of anticholinergic medications use by patients 65-years of age and older, changes to OAB therapy, and documented adverse side effects associated with a change in therapy throughout the evaluation period.

Updated pricing was utilized to propose a cost-based, tiered approach to OAB medication prescribing. Formulary utilization data and updated pricing were utilized to propose removal of local formulary restrictions on oxybutynin 5 mg extended-release tablets.

Results: Generated reports identified a total of 909 prescription fills for OAB medications within FVAMC. Overall medication utilization costs based on current drug file pricing were calculated to be approximately $53,800. Actual costs based on updated pricing from each vender were found to be $40,646 and $44,284. Individual dispensation costs differences ranged between $0.03 and $5.57 per unit from current drug file pricing.
Of the 909 prescription fills for OAB medications, oxybutynin immediate-release tablets accounted for 639 (70%) medication dispensations. Of this, 368 (58%) dispensations were for patients aged 65-years of age or older. Changes to OAB medication therapy in patients over age 65-years occurred in 17 (5%) patients. Reasons for medication changes were cited as due to adverse side effects related to anticholinergic therapy (n = 7) and poor efficacy (n = 10). Extended-release oxybutynin (all strengths) accounted for 57 (6%) dispensations, of which, 38 dispensations were for patients aged 65-years of age and older.

Conclusion: Updated drug file price listings result in a potential cost savings average of $11,335 annually. Additionally, updated drug pricing provides the foundation to devise a cost-based, tiered approach for OAB medication prescribing. Analysis of existing drug utilization rates indicate that immediate-release oxybutynin is most commonly prescribed in the treatment of OAB. However, current guidelines recommend the use of extended-release oxybutynin, particularly in patients over 65-years of age. Given both the cost comparison between the oxybutynin immediate-release and oxybutynin extended-release formulations and current guideline recommendations, data from this analysis supports the need to revise local OAB formulary restrictions.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-218

Poster Title: Evaluation of direct oral anticoagulant monitoring in a veteran population

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Purpose: Prescribing of direct oral anticoagulants (DOACs) as alternatives to warfarin has recently grown, and it is anticipated that this trend will likely continue in light of the 2016 CHEST update on the use of DOACs in venous thromboembolism (VTE). At this facility, prescribing of DOACs has increased by 123.8% within the last year. With this amplification of prescribing, it is essential to ensure that this increasing number of patients on DOACs is receiving appropriate laboratory and safety monitoring. This review will assess the percentage of Veterans in a representative sample receiving appropriate monitoring and assessment by Clinical Pharmacist Specialists (CPS).

Methods: A retrospective chart review will be conducted to evaluate whether the Veteran population at this facility are receiving appropriate laboratory and safety monitoring while on DOAC therapy. A representative sample of patients greater than or equal to 18 years of age who have an active prescription for apixaban, dabigatran, or rivaroxaban between September 1, 2015 and September 1, 2016 will be included in this data analysis. Computerized patient records will be reviewed to determine if patients were monitored at appropriate VA-specified intervals defined as baseline, 2 weeks, 4 weeks, 3 months, 6 months, and every 6 months thereafter. Additional data collected to determine appropriateness of use and dosing will include DOAC indication, serum creatinine, blood urea nitrogen, hemoglobin, hematocrit, platelets, creatinine clearance, weight, and age.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-219

Poster Title: Medication use evaluation (MUE) of liraglutide in a Veterans Affairs Medical Center

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Purpose: The 2016 American Diabetes Association guidelines have identified liraglutide as a potential first line monotherapy option for patients with Type 2 Diabetes. In addition, liraglutide has also been shown to be one of the first newer antidiabetic agents to demonstrate improved cardiovascular outcomes. Currently, the VHA limits liraglutide use to individuals that meet predefined criteria (i.e., poor glycemic control despite treatment with metformin combined with either another oral antidiabetic agent or insulin). The objective of this MUE is to retrospectively evaluate the use and clinical outcomes of liraglutide therapy in the Veteran population at the Salisbury VAMC.

Methods: This MUE's protocol was approved by the Pharmacy and Therapeutics (P&T) Committee. All patients with an active or inactive prescription for liraglutide from January 1, 2015 through August 26, 2016 were identified and a sample size of 150 patients will be randomly selected and analyzed. All patient identifiers will be removed prior to analysis and stored confidentially. The following data will be collected from the VAMC database: baseline patient demographics, liraglutide prescription information, antidiabetic therapy, HgbA1c, and adverse events. Descriptive data will be used to determine if liraglutide was prescribed in accordance with the criteria for use that have been developed by the Veterans Healthcare Administration Pharmacy Benefits Management (VHA PBM). Changes in HgbA1c, body weight, liraglutide dosing, diabetic medication regimens, and rates of liraglutide discontinuation will all be assessed.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 1-220

Poster Title: Evaluation of a pharmacist run direct oral anticoagulant (DOAC) monitoring at a Veteran Affairs medical center

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Purpose: The direct oral anticoagulants are becoming an increasingly popular alternative to warfarin nationwide. In October 2015, pharmacists at VA Nebraska-Western Iowa (NWI) established the DOAC pharmacist monitoring clinic to evaluate and adjust DOAC therapy. Due to the novelty of these agents, uncertainty arose regarding the optimal approach to therapy, such as the appropriateness of proactively converting patients to a more evidence-based agent prior to an adverse event. This project was designed to assess the impact of a pharmacist-run DOAC clinic, evaluate medication monitoring patterns, and determine if follow-up education is necessary.

Methods: The project was approved as non-research and data was collected utilizing the Pharmacist Achieve Results with Medication Documentation tool (PhARMD tool) dashboard reporting site which retrieves encounter information from the centralized data warehouse. Information collected included dose changes, medication discontinuation, and medication initiation. Pharmacists can also document education provided, which includes items such as peri-procedural instructions, medication education, disease state education, lifestyle counseling, education materials given, home monitoring devices provided, and referrals for additional care. Data analysis included a review of all patients for whom interventions were completed in the DOAC clinic using the PhARMD tool from October 2015 through June 2016. Patients who did not have a prescription for dabigatran, rivaroxaban, or apixaban from a VA pharmacy within this timeframe were excluded from analysis. The primary outcome was data tabulated via chart review to determine the reason for the medication adjustment. The data was then used to determine whether pharmacists are following NWI policies and to identify best practices for patient care. Secondary objectives include evaluation of the PhARMD tool for

better tracking of DOAC interventions, determination if education or revision of current policies is necessary to clarify areas of misunderstanding, and assessment of the need for additional education for pharmacists at NWI on proper monitoring of DOACs.

Results: From a total of 3743 encounters documented within the PhARMD tool throughout the project timeframe, 171 interventions were included in the analysis. A focus was made on medication changes based on age, incidence of bleed, renal function, or coronary artery disease to compare reasons for change among DOAC agents. After comparative evaluation, the vast majority of interventions were related to apixaban, whether patients were switched to the agent or dosage adjustments were made. At Grand Island, the most common reasons for converting to apixaban were age, renal function, and incidence of bleed or bleeding risk. At Lincoln, the most prevalent reason for change to apixaban from another agent was renal function. In patients initially on rivaroxaban, renal function was the most common cause for requiring a change in therapy and the majority of the renal adjustments occurred in Lincoln. The bulk of patients initiated on dabigatran were switched based on age or coronary artery disease and both of these changes only occurred in Grand Island. Between the two campuses, Grand Island pharmacists are much more likely to convert patients from other DOACs to apixaban while Lincoln pharmacists prefer to keep the patient on their current agent.

Conclusion: Drug-use evaluation is helpful in identifying pharmacists' impact on DOAC monitoring and practice patterns. Overall, pharmacists have a large impact on patients' DOAC regimen, especially on the basis of bleeding risk, age, renal function and coronary artery disease. It is of note that Lincoln and Grand Island developed different approaches based their interpretations of the same protocol. Therefore, further discussions may be necessary to determine whether it is more beneficial to proactively convert patients to another agent or to keep patients on their current regimen.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-221

Poster Title: Streamlining medication lists on discharge from the community living center (CLC) in a veterans affairs medical center

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Purpose: According to The Joint Commission long term care national patient safety goal (NSPG.03.06.01), the resident or family should be provided with a list of medications they should be taking when leaving the organization's care. The list should be given to the primary care physician to update when changes are made.
Currently at the CLC it is estimated that up to five medication lists are given to the patient in the discharge process. The purpose of this project is to decrease the number of medication lists that are given to patients when they are discharged from the CLC.

Methods: The pharmacist on the CLC and pharmacy resident will work together to condense information from multiple current documents. Currently, the provider's signs pre-typed discharge medication orders and handwrites dietary instructions and physical activity limitations. The nurse completes a nursing discharge summary which may or may not include active inpatient and outpatient medication orders as well as other patient specific instructions. The pharmacist provides a medication list for patients to take to appointments with other providers and a medication worksheet that specifies the time of day each medication should be taken.
The newly standardized document will convey provider's orders (outpatient medication orders, dietary instructions, physical activity limitations) as well as nursing instructions on discharge. Previously, this information was on two to three different documents. The pharmacist will continue to provide a separate medication list that the patient can have at home that makes it easy for the patient to organize and determine what time of day to take their medications when they are home.

Once this document is developed, provider and nursing staff on the CLC will be educated on proper use and spot checks will be performed by the pharmacy resident to determine adherence to using the standardized document and process. These spot checks will consist of the pharmacy resident observing discharges or reviewing patient's medical charts occasionally throughout the timeline of the project.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-222

Poster Title: Improving appropriate use of proton pump inhibitors through provider education in the ambulatory care setting

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Purpose: Proton pump inhibitors (PPI)s are highly effective at reducing gastric acid secretion, which could lead to unnecessary use beyond approved duration. When continued chronically, patients can be exposed to potential risks such as clostridium difficile. Given these risks, it is prudent that providers reassess patients' needs for continuation of chronic treatment. The purpose of this evaluation is to implement quality improvement in the form of education to providers on the risks of long-term use of PPIs. This evaluation was conducted at the Veterans Affairs in New Jersey to determine the number of patients receiving inappropriate therapy before and after education.

Methods: In this quality improvement evaluation, a retrospective and prospective analysis will be conducted on patients who are receiving proton pump inhibitors (PPI)s. Patients visiting the primary care clinic in East Orange on any PPI will be randomly selected for evaluation of appropriate therapy. The retrospective analysis will include those from June 2016 to August 2016, and the prospective analysis will include those from October 2016 to December 2016. In-service education through verbal and written communication will be provided during September 2016. Patients were identified for evaluation using the Computerized Patient Record System (CPRS). Patients were excluded if PPIs were obtained outside the Veterans Affairs. Data will be collected on age, gender, weight, estimated creatinine clearance, documented allergies to either a PPI or histamine2 receptor antagonist, indication for PPI or lack thereof, name of PPI, dose, schedule, and length of therapy. Appropriate indications for PPIs will be evaluated from American College of Gastroenterology and American Gastroenterological Association guidelines. These include symptomatic gastroesophageal reflux disease less than 60 days, treatment for Helicobacter pylori 10 to 14 days, previous

gastrointestinal bleed or high risk of gastrointestinal bleed, peptic ulcer disease, esophageal strictures, erosive esophagitis, Zollinger-Ellison syndrome, Barrett's esophagus, bariatric patients for two years after gastric bypass surgery, and gastric malignancy or previous esophageal or gastric surgery.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-223

Poster Title: Evaluating appropriateness of the use of laxatives in opioid-induced constipation

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Purpose: Opioids commonly cause constipation, and this is an adverse effect that does not mitigate over time. Constipation can decrease quality of life or cause patients to decrease use of pain medications and compromise pain relief. Implementing a bowel regimen to prevent and manage constipation is essential when starting opioids. This medication use evaluation will determine the proportion of patients prescribed appropriate bowel regimens with opioids in the outpatient setting. These findings may help determine if interventions are needed to ensure appropriate use of laxatives and optimize patient care.

Methods: This is a retrospective, single center, medication use evaluation. A list generated from the Veterans Health Information Systems and Technology Architecture (VISTA) will be used to review all outpatient prescriptions for a new oral opioid for pain between July 1, 2015 and July 1, 2016. Patients with a "new opioid" will be defined as a patient without a prescription for an opioid in the last six months. Opioids will include hydromorphone, hydrocodone/acetaminophen, oxycodone, oxycodone/acetaminophen, oxymorphone, and morphine. Patients will be included if they are at least 18 years old, and have a designated primary care provider at the site. Patients will be excluded if they have spinal cord injuries or any type of ileus or bowel obstruction. Patients from the emergency room, substance abuse clinic, gastrointestinal clinic or spinal cord clinic will be excluded. Patients recently discharged will be excluded. Patients receiving prescriptions for transdermal fentanyl, codeine, methadone, tramadol, and other combination opioid products will be excluded. The following data will be collected: patient age, sex and race; prescribed opioid, morphine equivalent daily dose, prescribed laxatives (includes docusate, lactulose, magnesium citrate, polyethylene glycol 3350, senna, sorbital, bisacodyl enema, mineral oil enema, phosphate enema), and prescriber location. Descriptive statistics will be used.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-224

Poster Title: Impact of pharmacist delivered post-discharge telephone follow-up calls on reducing heart failure readmission rates

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Purpose: More than half of heart failure patients are readmitted within 6 months of discharge. A pharmacist coordinated clinical service involving post-discharge follow up has been shown to reduce the rate of readmission for heart failure. Veterans Affairs New Jersey Healthcare System (VANJHS) recently has had a 21.4% 30-day readmission rate. Though lower than the national average of 23.1%, this percentage remains above the VA goal. The objective of this project will be to evaluate the impact of a pharmacist delivered post-discharge telephone follow-up on heart failure 30-day hospital readmissions and observe possible trends that pose as risk factors for readmission.

Methods: In this quality improvement project, a retrospective and prospective analysis will be conducted on patients who have been discharged from the VANJHS with a diagnosis of heart failure. The retrospective analysis will include a random sample of those patients from November 2015 to February 2016 and the prospective analysis will include a random sample of those patients from November 2016 to February 2017. The exclusion criteria includes patients with a private cardiologist, language barriers, without telephone access, or are discharged to an outside long term care facility or hospital. Data will be collected on readmission rates, adherence, NYHA class, AHA stage, length of hospital stay, appropriate medication regimen, tele-health enrollment, and patient factors such as age, gender, co-morbidities, serum creatinine, serum sodium, weight, and body mass index. Patients were identified for the retrospective analysis using the Computerized Patient Record System (CPRS) by the informatics pharmacist. For the prospective analysis, the discharge list will be filtered every two days for diagnoses of heart failure within the past four days. After conducting a thorough chart review,

eligible veterans will be contacted via telephone using a structured telephone template to be interviewed, assessed, and educated on the proper management of heart failure. Based on information gathered from the chart review and patient interview, changes to the drug regimen may be suggested to the cardiologist.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-225

Poster Title: Assessing the effectiveness of a pharmacy based immunization clinic among adult Native American patients in the outpatient setting

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Purpose: Healthy People 2020 list target goals to achieve by the year 2020 for immunizations. According to the Center for Disease Control's latest statistics, vaccination rates fall short for both the annual influenza vaccine and the pneumococcal vaccine for adults. The objective of this study is to assess the impact on vaccination rates of the influenza vaccine for adults ages 19 years and older as well as the pneumococcal vaccine for adults ages 65 years and older after the initiation of an outpatient pharmacy based immunization clinic.

Methods: This study will be submitted to the Institutional Review Board for approval. This study will take place in an outpatient clinic located in Albuquerque, New Mexico. The electronic medical record will identify all patients 19 years and older who received an influenza vaccine and separately all patients 65 years and older who received a pneumococcal vaccine between the timeframe of September 2015 – May 2016. This data will be used to determine the percentage of all active patients within the outpatient clinic who received each respective vaccine. This percentage data will be compared to the current study during the same timeframe for the year 2016-2017 and used to assess the impact on vaccination rates due to the initiation of a pharmacy based immunization clinic.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-226

Poster Title: Pharmacist-managed adult and pediatric asthma clinic at a rural Indian Health Service site

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Purpose: American Indian and Alaska Native (AI/AN) persons have a higher prevalence of asthma compared to the general, non-AI/AN population. Poorly controlled and uncontrolled asthma are burdens to the United States healthcare system and result in avoidable hospitalizations, emergency department visits, and premature death among others. The objective of this study is to determine the effectiveness of a pharmacist-managed asthma clinic by reducing the frequency of albuterol inhaler use, increasing adherence to maintenance asthma medications, and minimizing urgent care and emergency department visits where the purpose of the visit is to receive maintenance asthma care.

Methods: Visit General Retrieval (VGEN) reporting in the electronic health record (EHR) was used to identify patients with at least one visit to the emergency department, urgent care clinic, or inpatient ward since October 1, 2015 at the Crownpoint Healthcare Facility under the following International Classification of Diseases, Tenth Revision (ICD-10) codes: J45.21, J45.31, J45.32, J45.41, J45.901, and J45.902. VGEN reporting was also used to identify albuterol fills and refills. This method identified approximately thirty high-risk patients for potential inclusion in the pharmacist-managed asthma clinic. Upon hospital approval of the Asthma Management Clinic (AMC) policy, healthcare providers will be notified for high-risk patient referral. Initial clinic visits will be scheduled through the Resource and Patient Management System (RPMS) for 60 minutes in duration and follow-up appointments for 30 minutes in duration. Follow-up visits will be determined by asthma severity and degree of control. Clinic visits will follow visit specific checklists found in the AMC policy and will include patient completion of the Asthma Control Test (ACT), medication management and counseling, immunization review/administration, patient education, and review of the patient's asthma action plan. Quality assurance reviews will be performed every 3 months by the AMC manager to determine individual patient

albuterol inhaler use, maintenance medication adherence, and location of asthma care. This study will be submitted to the Navajo Institutional Review Board for approval.

Results: N/A - Research-in-progress

Conclusion: N/A - Research-in-progress

Submission Category: Clinical Services Management

Submission Type: Descriptive Report

Session-Board Number: 1-227

Poster Title: Assessment and analysis of developing a pharmacist clinician program in a rural healthcare system

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Purpose: In 1993, the Pharmacist Prescriptive Authority Act granted New Mexico pharmacists prescriptive authority, in collaboration with physicians, to manage chronic disease states. Pharmacists' unique experiences and training in medication management, drug therapy assessments, and public health are essential to the healthcare team in terms of improved health outcomes, patient safety, and reduced costs. This project will increase our understanding of the pharmacist clinician's role, its effect on patient care, and how it can be integrated into outpatient services. The pharmacist clinician program can decrease physician work load, increase pharmacist satisfaction, and serve as a source of income for the hospital.

Methods: The pharmacist clinician program consists of the following: obtaining a New Mexico pharmacist license, successful completion of a 60-hour board approved physical assessment course, and a 150-hour or 300-patient contact preceptorship by a supervised provider with prescriptive authority. The cost of this program will vary by type of pharmacist: practicing pharmacist, pharmacy resident, or pharmacy student nearing graduation from the University of New Mexico College of Pharmacy. A comparative analysis will assess the productivity, cost, and value of developing a pharmacist clinician program for a rural health care system. Items assessed will include direct and indirect costs to the system, a proposed timeline to train incoming and current clinical pharmacists, a summation of potential benefit gained by the hospital for providing the additional training, and increased patient access to healthcare.

Results: In progress

Conclusion: In progress

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-228

Poster Title: Development of a multidisciplinary wellness clinic at a rural Indian Health Service (IHS) hospital

Primary Author: Christopher Mendoza, Gallup Indian Medical Center, NM; **Email:** christopher.mendoza@ihs.gov

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Purpose: The Navajo people struggle with some of the worst health outcomes in the United States. For example, one-in-three Navajo are diabetic or pre-diabetic. In the Navajo Nation, healthcare workers diagnose diabetes in every other patient. The development of a multidisciplinary wellness clinic is highly needed to make positive changes in patient's lives and the community. This clinic would be aimed at motivating and educating patients on nutrition and physical activity with the goal of decreasing polypharmacy and improving quality of life.

Methods: This pharmacy run wellness clinic would require the involvement of various departments at GIMC: Pharmacy, Physical Therapy, Diabetes Clinic, Nutrition, Family Medicine, and Internal Medicine. A collaborative agreement will be developed to enroll patients into the clinic on a referral basis. Inclusion criteria for clinic referral will be newly diagnosed, adults (< 40 years old), highly motivated individuals who are looking to change their health picture through a Therapeutic Lifestyle Change perspective. A cohort of 20 patients will be followed for one year. Baseline labs will be obtained at the initial visit and every 3 months to assess health outcomes such as A1C, total cholesterol, HDL, BMI and number of daily medications. In the initial stages, patients will be scheduled on a one-on-one basis to gather initial data. Group classes would be utilized for educational purposes on physical activity, nutrition, and primary prevention. Liaisons within the various departments will be established to aid in communication and dissemination of information. At the end of the probationary period, a cost-benefit analysis will be conducted to assess direct and indirect costs in relation to health outcomes.

Results: In progress

Conclusion: In progress

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 1-229

Poster Title: Assessment and optimization of pharmacy point-of-sale billing at an Indian Health Service facility

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Purpose: The purpose of this project is to assess and improve the current situation of pharmacy point-of-sale (POS) billing at the Northern Navajo Medical Center (NNMC). Through evaluation, collaboration, and implementation of pharmacy involvement in the billing and pharmacy claims rejection process, this project aims to optimize billing efficiency and increase collections by decreasing the proportion of medication claims rejected by private and government third party payors. This will increase the facility's fiscal capacity to provide additional patient care services. This project will also highlight the value added by pharmacy involvement in the POS process.

Methods: This is a multi-phase quality improvement project aimed at improving the pharmacy POS billing processes in an Indian Health Service (IHS) facility. The initial phase consists of basic groundwork including attending training, site visits to other IHS facilities, connecting with experts in POS within the Resource and Management Patient System (RPMS), and understanding payor regulations due to a lack of published and standardized literature on improving POS billing within the IHS system.
The second phase will include completing an assessment of the current pharmacy billing processes by analyzing the following POS data: percent and cost of rejected claims, percent and cost of rejected claims which have been fixed, the total amount of paid claims, and the total drug expenditures. The project will establish relationships with all departments in the facility that are associated with the billing process (i.e. the business office, pharmacy, and patient registration office), to allow for thorough evaluation of current practices and help determine the baseline pharmacy prescription billing efficiency.

Interventions will include pharmacy monitoring within the RPMS-generated rejection report and implementation of the CoverMyMeds program for medication prior authorizations, with system-wide changes implemented when system problems are identified within the billing process. The reports used to initially assess billing efficacy will then be tracked and analysed every three months to determine the effectiveness of implemented interventions.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-230

Poster Title: Implementing a sequential antibiotic therapy protocol in a rural Indian Health Service hospital

Primary Author: Julia Olson, Northern Navajo Medical Center, NM; **Email:** julia.olson@ihs.gov

Additional Author (s):
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Purpose: Switching from intravenous (IV) to oral (PO) medications, or sequential therapy, is an important part of any antimicrobial stewardship program. The purpose of this project is to validate the use of an IV to PO switch protocol at a rural Indian Health Service hospital, to show the potential for reduction in cost of delivering treatment, and demonstrate a decrease in the length of hospitalization for patients receiving antibiotics in the inpatient care setting.

Methods: The electronic health records system will notify pharmacists of any patients receiving a qualifying antibiotic intravenously. Qualifying antibiotics will include ampicillin, azithromycin, clindamycin, ciprofloxacin, doxycycline, fluconazole, levofloxacin, and metronidazole. Pharmacists will follow the IV to PO switch protocol and contact the attending physicians to recommend sequential therapy. For the purpose of data collection, the electronic health records system will be utilized to create a list of patients receiving a qualifying antibiotic for three months after the implementation of the protocol. A similar list will be created of patients who received a qualifying antibiotic during the same three months in the previous year. The following information will be collected for each patient: age, gender, comorbid conditions, source of infection, recent hospitalizations within the past six months, the primary physician responsible for managing antibiotic therapy, the results of any microbiology cultures and sensitivities, and any other antibiotics prescribed during the same admission. The cost of administering antibiotics, rates of hospital readmissions, rates of phlebitis, rates of catheter-associated infections, and the length of hospital stay will be compared between pre- and post-implementation groups. All data will be recorded without any patient identifiers.

Results: Not applicable. Research in progress.

Conclusion: Not applicable. Research in progress.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-231

Poster Title: Evaluating the impact of clinical decision support on outpatient antibiotic prescribing within the Alaska Native and American Indian population

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Purpose: A predominantly outpatient, multicenter facility serving the Alaska Native and American Indian population is developing an up-to-date clinical decision support (CDS) system in efforts to slow antimicrobial resistance and improve patient care and safety. The objective of this study is to assess the impact of the CDS system in reducing the proportion of inappropriate antibiotics prescribed.

Methods: This study is exempt from institutional review board evaluation since it is a quality improvement study that involves the collection of existing data recorded in a manner that prevents subject identification. Treatment algorithms for the most common infectious disease states identified at the facility are in development using the facility antibiogram and evidence-based guidelines, such as the Infectious Diseases Society of America (IDSA) guidelines. These algorithms will then be programmed into the electronic health record (EHR) as a CDS system for provider use. This CDS system will contain quick orders with disease-specific antibiotic recommendations to help facilitate provider prescribing. Once fully implemented, this study will look at prescribing practices during two separate six-month periods before and after implementation of the CDS system. Inclusion criteria include all outpatient office visits with an initial diagnosis among those identified common infectious disease states. Exclusion criteria include visits by patients less than 18 years of age. Chart reviews will be performed to determine if antibiotic prescribing practices during those visits are congruent with current practice guidelines based on disease-specific treatment algorithms. The primary outcome of interest is the proportion of inappropriate antibiotics prescribed. Inappropriate prescribing practices are defined as practices not in congruence with treatment algorithms. Analysis of the

primary outcome before and after the intervention will be performed to evaluate the impact of this quality improvement project.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-232

Poster Title: Expanding healthcare delivery and access to care for rural veterans, by leveraging clinical pharmacy specialist providers.

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Jeffrey Blanchet

Purpose: Rural populations are uniquely susceptible to limited access to healthcare services. Given the high rurality of the VA Sierra Nevada Health Care System (VA SNHCS) and its Community Based Outpatient Clinics (CBOCs), it is important to utilize resources effectively to provide equivalent access and quality of care across the entire veteran population. Leveraging Clinical Pharmacy Specialists (CPS) with advanced scope of practice may impact accessibility of quality healthcare. Pharmacists offering chronic disease states management services may reduce the growing demand on VA physicians, improving availability of providers.

Methods: Grant funding available through the VA Office of Rural Health (ORH) Enterprise Wide Initiative (EWI) provides an opportunity to expand Clinical Pharmacy Specialist (CPS) roles in ways that influence rural veteran access. The increased CPS staffing may help develop more robust services in rural veteran healthcare. A rural healthcare gap analysis was conducted using VA identified core measures impacting patient care outcomes within VASNHCS. Further, workload and encounter data for CBOC pharmacists were used to justify and prioritize pharmacy based positions for the ORH funding application. Potential positions were identified with a goal to optimize VASNHCS staff utilization for increased rural access to CPS care. Once the positions have been approved, functional statements and scopes of practice will be developed. A PGY1 resident clinical practice area will be developed to contribute to rural patient care, improve access, and help define new rural CPS provider roles. Identified targets and outcomes will frame the evaluation of expanded services. Assessments will be performed to rate progress toward the goal of increased access and association to clinical outcomes of care. Long term goals of service expansion and sustainability will be explored. The above

outlined process was determined to be a quality improvement based analysis by the local institutional review board.

Results: Based on the rural healthcare gap analysis, seven positions were identified to offer progress toward outlined goals of healthcare service to veterans. These positions include direct CPS involvement, adequate support staff, and depend on work-load redistribution strategies. Justifications of the positions have been submitted to Office of Rural Health in August 2016. Official approvals for the selected positions will be announced in October 2016. Results will be presented in May of 2017 at Western States Conference.

Conclusion: Leveraging CPS providers may help develop more robust services in rural healthcare for veterans.
It is expected that rural Veteran health care outcomes will be positively impacted with enhanced Clinical Pharmacy Specialist position utilization. Target measures have the potential to define and propel projects toward sustainability, prioritizing quality health care for our rural veterans as valued members of the growing VA community.

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 1-233

Poster Title: Optimizing antibiotic use in the outpatient setting with antimicrobial stewardship program

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Mostaqul Huq
Kim Jacques

Purpose: Antimicrobial stewardship programs were shown effective in optimizing antibiotic use and promoting prescriber adherence to clinical practice guidelines. The developed a pilot Outpatient Antibiotic Stewardship Program last year. The objectives of this quality improvement project are to fully operationalize the program for sustainability and to expand in many clinical areas with improved provider centric order sets for outpatient antibiotic therapy. The project is expected to improve patient-centered outcomes by decreasing health care utilization, including clinic and emergency room visits, due to failed antibiotic therapy.

Methods: New provider-centric electronic order sets will be created specific to upper and lower respiratory tract infections, otitis media, dental infections, and animal bites considering Infectious Diseases Society of America (IDSA) guidelines, local antibiogram, and the Veteran Affairs national and local formulary. These will complement existing order sets for pneumonia, influenza, urinary tract infection (UTI), and cellulitis. They provide preferred treatment options and renal/hepatic dose adjustments as necessary. Patients prescribed antibiotics in the outpatient setting will be identified through a Clinical Dashboard. Chart reviews will be conducted against relevant labs to determine if antibiotic therapy was appropriate, including dose, duration, and drug-bug mismatches. Follow-up telephone calls to those patients will be made three to five days after antibiotic initiation to assess symptom improvement, possible antibiotic side effects, and adherence. A standard progress note will be used for documenting encounters and alerting prescribers of any recommendation for changes to therapy or worsening of symptoms. Further, a '4-day antibiotic list' report will be generated daily to identify patients who have not picked up antibiotic prescriptions from the pharmacy. These

patients will be contacted to provide education on completing antibiotic therapy. Assessing the appropriateness of antibiotic selection, dose and duration of therapy following these two identification methods will help to create an 'Antibiotic Trigger List' for high-risk antibiotics with stringent criteria for use.

Results: The outcomes of the project include identification and assessment of potential overuse and prolonged durations of antibiotics therapy, drug-bug mismatches, interventions taken and clinical response rates. Results will be presented in May at the 2017 Western States Conference.

Conclusion: The optimization of antibiotic therapy in the outpatient setting is expected to improve antibiotic prescribing, drug utilization, and patient outcomes. Further, this may reduce the overall healthcare cost and the spread of multi-drug resistant organisms. When fully operational, it is anticipated the antibiotic stewardship program will provide prescribers the necessary tools to achieve the overall goals of adhering to clinical practice guidelines and offer the best standard of care to patients.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Evaluative Study

Session-Board Number: 1-234

Poster Title: Evaluating naloxone rescue therapy and outcomes in patients at risk of opioid overdose in a veteran population.

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Purpose: Naloxone is a life-saving medication for opioid overdose. It has been used by emergency personnel for many years. Recently, the FDA has approved the use of naloxone nasal spray, a device that can be easily administered by the lay person. New laws in many states allow for easy access to this life saving device due to the dramatic rise of opioid related overdose and death. This project is designed to evaluate and identify areas of improvement for appropriate delivery, education, and outcomes of prescribing naloxone to patients at high risk for opiate overdose at the VA Sierra Health Care System.

Methods: This is a quality improvement project reviewed by local IRB. Patient's electronic medical records will be reviewed to identify patients at risk for possible opioid overdose. These include patients with current or prior history of filling a naloxone prescription, prior ED visit or hospitalization related to opioid overdose, and those on chronic opioids greater than or equal to 90 mg of morphine equivalent daily dose, long acting opioids, or concurrent CNS depressants. Additional high risk groups include patients with substance abuse disorder, sleep apnea, chronic kidney or liver disease, suicide risk, advanced age, and those who recently switched to a new opioid. Once identified, patients will be provided a naloxone device with adequate education. A PGY-1 pharmacy resident will be directly or indirectly responsible for inter-professional education, staff engagement and decreasing barriers to prescribing. VA approved video training and time-effective prescribing will be utilized to reach a goal of providing 100% of patients at risk with a naloxone device. A Telephone follow-up process for those already receiving naloxone devices will be developed to assess use, patient knowledge, and need for refill or further education. Scheduled clinical pharmacy telephone follow up will

be conducted for all newly prescribed rescue devices for sustainability. The outcomes include percentage of high risk patients provided with naloxone kits, successful follow ups, and prevention of opioid related death across intervention period.

Results: In process

Conclusion: In process

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Evaluative Study

Session-Board Number: 1-235

Poster Title: Deprescribing of benzodiazepines in high-risk patients through multifaceted interventions

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Purpose: Despite the risks of serious adverse effects and potential abuse due to long-term benzodiazepine use, prescribing remains elevated in high risk groups such as those who are greater than 75 years old or those with concomitant narcotic use. The purpose of this project is to develop effective clinical practice strategies in order to deprescribe or taper patients off benzodiazepines. The project is expected to reduce adverse drug events and overall harm in high-risk patients receiving long-term benzodiazepines.

Methods: The project was reviewed by the local IRB and determined as a quality improvement project. High-risk patients (≥ 75 years old) with an active benzodiazepine prescription will be identified using a Clinical Dashboard. The drug utilization review on benzodiazepine use will be performed by a pharmacist. The prescribing provider will be contacted to determine if deprescribing of benzodiazepine is clinically appropriate. Patients identified will be mailed information on potential adverse effects of long-term benzodiazepine use and the pharmacy's contact information if they decide to taper off the medication. Targeted patients will also be contacted over the phone to discuss their willingness to discontinue benzodiazepine therapy. If patients are not immediately available, a scripted message with a request to contact the pharmacist will be left on voicemail. If no response is received after three attempts, patients will be excluded and providers will be notified. For patients who agree to taper off, the pharmacist will work in collaboration with the prescribing provider on regular basis for assessment of progress. The plan for benzodiazepine tapering will be based on current clinical guidance and patient centered. If complete discontinuation of benzodiazepine is unsuccessful, the goal would be to decrease to the lowest effective dose. Patients will also be offered to see

mental health or other clinical specialties for further evaluations if they were unable to discontinue the benzodiazepine.

Results: Results of this project will be presented in May at the 2017 Western States Conference.

Conclusion: Conclusion of this project will be presented in May at the 2017 Western States Conference.

Submission Category: Geriatrics

Submission Type: Descriptive Report

Session-Board Number: 1-236

Poster Title: Impact of a new patient medication therapy managment service in a geriatric primary care clinic

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Purpose: Nearly 250 elderly Veterans will be transferred from traditional primary care teams into a geriatric clinic at the VA Sierra Nevada Health Care System. Traditional primary care teams operate with clinical pharmacists, however the geriatric clinic is currently without a designated pharmacist. This population is considered highly complex with advanced age, comorbidities, and polypharmacy thus the need for geriatric clinical pharmacy services. This is a quality improvement (QI) project aimed to establish the role of a geriatric pharmacist in providing new patient medication therapy management (MTM) services prior to the initial geriatrician visit to improve patient outcomes and clinic efficiency.

Methods: This project was deemed QI by local IRB which did not meet criteria for human subjects research or IRB exemption review. It will be conducted in a geriatric primary care clinic, which consists of a PGY-2 geriatric pharmacy resident, geriatrician, and nurse. Approximately 250 Veterans meeting age and complexity criteria who recently transitioned from general primary care teams into a geriatric clinic will be eligible for MTM services. Veterans who opted out of the new geriatric clinic will be excluded. Veterans will be scheduled for face-to-face new patient MTM visits with the geriatric pharmacist at least two hours prior to their initial geriatrician visit. This will allow time for the geriatrician to review pharmacist recommendations. The pharmacist will record the encounter and recommendations in the VA's computerized patient record system. MTM appointments will be scheduled into a longitudinal clinic on Friday's and a 6 week block clinic that coordinates with the geriatrician's schedule from 9/2016 through 2/2017. The pharmacist will collaborate with the geriatrician to provide recommendations for safe drug therapy, formulary management, immunizations, labs, and referrals for ongoing MTM services. Outcomes of the MTM services will be measured against recommendations accepted by the geriatrician; accepted interventions implemented on the

same day of initial visit; number of MTM visits completed prior to the Veterans first geriatrician visit; and clinic utilization rates.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 1-237

Poster Title: Evaluating clinical outcomes of abiraterone and enzalutamide use in castration-resistant metastatic prostate cancer in a veteran population

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Purpose: Abiraterone and enzalutamide are approved by the FDA for treatment of castration-resistant metastatic prostate cancer (cRMPC) in patients who progress despite hormonal therapy or chemotherapy. But it is unclear whether treatment with a second antiandrogen in cRMPC is effective. We seek to validate whether clinical trial results of these agents are applicable in a clinical setting, and how their utilization patterns in clinical practice may affect those results. The current project will also assess whether patients on abiraterone or enzalutamide met appropriate criteria for use while on therapy or were appropriately discontinued according to VA national PBM guidance for discontinuation.

Methods: This is a quality improvement (QI) project within the Veterans Affairs healthcare system. Local IRB reviewed the project and it did not meet the criteria of federal definition for research. A list of patients diagnosed with prostate cancer and treated with either abiraterone or enzalutamide in the past 3 years will be pulled from the VA prescription database. Retrospective chart review and data extraction from the electronic health record will be conducted concurrently to assess whether abiraterone or enzalutamide were effective in treating prostate cancer that progressed following androgen deprivation therapy. Baseline patient characteristics will be assessed for appropriateness of therapy initiation and to determine whether defined discontinuation criteria for these agents were met. The effectiveness of these drugs will be evaluated based on several primary outcomes including suppression of PSA, time to response, rate of response, progression free survival, and overall

survival. Secondary outcomes will include assessment of tolerability of one agent over the other.

Results: The primary outcomes include a comparison of the rate of response, time to response, progression free survival and overall survival relative to the results from pivotal phase 3 randomized controlled trials (RCT's) of abiraterone and enzalutamide. In addition, utilization and discontinuation of both drugs will be evaluated based on criteria for use set by the VA and the percentage of patients appropriately treated and discontinued will be calculated.

Conclusion: This project offers an opportunity to assess the real world experience of abiraterone and enzalutamide therapy in cRMPC in a clinical setting. The results will enhance the clinical decision making process in treating prostate cancer within the VA population.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-238

Poster Title: Heuristic and end-user analysis of clinical and operational population management tools in VISN 21

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Purpose: Veteran Integrated Service Network (VISN) 21 pharmacists have created and maintain over 300 clinical and operational population management tools, i.e. dashboards and reports, based on electronic health record data.
These population management tools allow for a comprehensive view and analysis of clinical and operational data. Clinicians and managers use this data to more efficiently monitor patient populations and staff for quality, safety, and workload.
While use of these tools has been widely adopted in VISN 21, usability has never been formally assessed. This project will evaluate the usability of these tools using heuristic analysis along with end-user testing and surveys.

Methods: The project structure includes the following distinct steps: end-user survey, heuristic evaluation, end-user testing, and repeat end user survey. The end-user surveys will be assessed at the beginning and end of the project. These surveys will collect demographic and use information from current dashboard users (clinicians and staff), opinions on data accuracy, ease, and usability of current population management tools. The pre-survey will also ask the users if they would be willing to participate in user testing at a later date for comparative data. Following pre-survey, a heuristic evaluation will be done of selected population management tools. The heuristic evaluation is a detailed analysis and breakdown of the selected tools by usability and domain experts. A usability expert is a person who understands how these tools are supposed to be built, while a domain expert is a person who understands the underlying information the tools display. The heuristic analysis evaluates confirmation or violation of 14

established heuristic principles from Zhang. During this phase common problems will also be identified by end-user testing. Design problems will be identified and resolved, and a post-survey will be sent to users to determine if the usability of the dashboards has improved.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-239

Poster Title: Evaluating the impact of clinical decision support tools to reduce chronic opioid dose and decrease risk classification in high risk veterans in VISN 21.

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Purpose: VHA and VISN 21 have implemented two clinical decision support tools (CDST) to address the impact of chronic opioid therapy (COT) on quality of life and adverse event risk. This study will identify high risk COT veterans and evaluate for the following outcomes before and after provider visits: 1) reduction in morphine equivalent daily dose (MEDD), 2) change in Risk Index for Overdose or Serious Prescription Opioid-Induced Respiratory Depression (RIOSORD) risk class, and 3) decrease in MEDD per RIOSORD risk class. Insight on the influence of two CDSTs to reduce chronic opioid dosing will be gained in this study.

Methods: This quality improvement project will retrospectively evaluate the impact of two CDSTs (COT – Clinical Reminder [COT-CR] and Stratification Tool for Opioid Risk Mitigation [STORM]) on decreasing opioid prescribing in high risk veterans. COT-CR correlates quality of life to current opioid regimen through a prompted pain assessment. STORM is an information-only tool which includes RIOSORD risk score and corresponding risk class. RIOSORD risk score is calculated using active pharmacotherapy profile and relevant diagnoses. Study subjects will be identified and queried through the VISN 21 data warehouse, comprising records from seven VHA medical centers. Preliminary queries have returned approximately 14,000 veterans meeting study inclusion criteria. High risk COT patients are defined using CDC guidelines and retrospective study data. An index date will separate the before and after provider visit timelines. Index date is defined as the completed COT-CR date or first appointment date after a COT-CR notification is generated. Each outcome will be measured at two time points: pre and 6 months post index date. Results for all high risk COT veterans, with and without a completed COT-CR, will be included to determine if reduction was more likely in the clinical reminder

group. Evaluating decline in risk class and reduction in MEDD per risk class will shed light on whether priority to decrease opioids is based on higher risk classification.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 1-240

Poster Title: Drug formulary, drug cost and effect on clinical practice; an evaluation of a large medical facility's mental health prescribers

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Purpose: Consideration of the medication costs in mental health drugs is important for managing healthcare resources efficiently and providing good patient care. For patients without insurance or co-pays, mental health medication costs have been shown to negatively affect medication compliance and are correlated with readmissions to psychiatric facilities. In 2003, a large medical facility in Oregon reported how provider discussions over costs played a role in reducing SSRI costs. The purpose of this study is to access awareness and the impact of medication costs on mental health providers' decisions.

Methods: Mental health prescribers of the large medical facility will be administered an in-person survey assess current considerations toward medication costs and its effect upon clinical decisions. The survey will also assess provider knowledge of current medication costs, and what methods they would prefer to learn about current medication costs and the local and national formulary of the health system. Over the course of 2 months, meetings will be schedule with providers to administer the survey. Once all of the meetings have been completed, a 45 minute workshop will be held to show the results as well as educate provider about drug costs what tools and resources are available for them. For providers unable to attend the workshop, the provider will have the option to setup a personal meeting to review the workshop content. The workshop will be held in February, and the same survey will be repeated 1 month after

Results: n/a

Conclusion: n/a

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-241

Poster Title: Impact of providing education to pharmacists and prescribers on Beers criteria: will it show a reduction in prescribing these medications?

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Purpose: Currently, Beers criteria is the gold standard for identifying potentially inappropriate medications in the geriatrics population. There have been studies that have shown the efficacy of therapeutic management in the geriatrics population. Prescribing inappropriate medications to the geriatrics population has been a problem for quite some time. This study is to provide education to the pharmacists and prescribers and to see if there will be a reduction in prescribing habits listed in the Beers criteria. This may lead to an implementation of a program which monitors medications on the Beers criteria.

Methods: The pharmacists and prescribers will receive a PowerPoint presentation on the potential harm of prescribing these types of medications. The patient population will be patients over the age of 65 who are seen by prescribers at a large medical facility. Prospective cohort design will be used to assess the reduction in prescribed medications on the Beers criteria. Geriatric patients who are taking the top prescribed medications at the large medical facility (omeprazole, terazosin, temazepam, pantoprazole, ibuprofen) will be pulled at random. Baseline number of patients will be recorded. Approximately 100 charts will be reviewed, interventions will be made and documented in the electronic medical record about a possible change in therapy, with the prescribers co-signing the notes. After all the interventions have been made and notes are co-signed by the prescribers, the number of interventions accepted will be observed.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-242

Poster Title: Evaluation of patient empowerment tool targeted to high risk benzodiazepine population

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Additional Author (s):
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Purpose: To evaluate the impact of a patient empowerment tool targeted to high risk benzodiazepine users

Methods: As part of a quality improvement project, patients receiving benzodiazepines and identified as high-risk for adverse drug events were mailed a letter describing side effects and dangers of chronically taking a benzodiazepine and encouraged to speak to their doctor about tapering their medication. Patients were identified from population health dashboards and defined as high risk if they received a chronic benzodiazepine and met one the following high risk criteria: dementia or post-traumatic stress disorder diagnosis, concurrent chronic opioid prescription, or age 75 or older. All patients receiving a letter will be included in this evaluation. Patients without a valid address, whose mail was returned, or without a baseline medication possession ratio will be excluded.
The primary outcome of this study is to observe a change in medication possession ratio 6 months after the letter was mailed. Secondary outcomes will include rate of benzodiazepine discontinuation in the cohort at 3 and 6 months, analysis of patient characteristics that may contribute to decreased benzodiazepine medication possession ratio, and a calculation of risk avoidance.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 1-243

Poster Title: Improving the use of potentially teratogenic medications in women Veterans of child-bearing age receiving mental health care

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Additional Author (s):
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Purpose: Veterans Affairs (VA) facilities are experiencing a a demographic shift that includes more female Veterans, particularly younger females. These Veterans are now seeking care at VA facilities across the country, and the VA will be responsible for these Veterans during their reproductive years and beyond. The purpose of this project is to improve counseling and education for patients of child-bearing age who are prescribed and/or currently receiving potentially teratogenic medications without an active order for contraception. Additionally, emphasis will be placed on developing educational interventions and system tools to improve prescribing, counseling, and education for patients of child-bearing age.

Methods: Patients will be identified using a local clinical dashboard, which identifies female patients of child-bearing age who are currently prescribed a pregnancy category C, D, and/or X medication without an active order for some form of contraception. Prioritization will include those between the ages of 18 to 45 years, and those who receive care for a mental health condition at this facility. Patients identified will then be reviewed for education regarding safety during pregnancy and lactation, appropriateness of medications and potentially safer alternatives. These patients will be contacted by mental health pharmacists to provide education and make recommendations for contraception if appropriate. Patients will also be referred to womens health services for further evaluation when necessary. Additional educational interventions will target health care providers regarding updated FDA guidance and available resources for safe prescribing in this patient population. System improvements will target documentation, which may include developing note templates to be utilized in the electronic medical record (EMR), clinical reminders, and tools for improved documentation to

include items such as non-VA contraception, pertinent procedure history, and education provided to patients.

Results: In progress

Conclusion: In progress

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-244

Poster Title: Comparison of Enoxaparin and Dalteparin for the use of Perioperative Bridging in Hypercoagulable Patients Enrolled in Anticoagulation Clinic at Stratton VA

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Purpose: The CHEST guidelines for perioperative management of anticoagulation recommend use of unfractionated heparin, enoxaparin, and dalteparin for bridging. However there is insufficient data to recommend a preferred agent. Perioperative bridging is utilized to reduce risk of thrombotic events while holding warfarin. Patients with hypercoagulability are especially susceptible to thrombotic events. The purpose of this study is to analyze enoxaparin and dalteparin for perioperative bridging of hypercoagulable patients at the Stratton VA to determine if choice of regimen and dosing impacts outcomes. Ultimately, this study aims to determine if one anticoagulant regimen should be recommended over another for this high-risk group.

Methods: This study is a retrospective chart review including all patients who received a bridging consult from 10/06/09-07/31/16, since the implementation of such consults at the Stratton VA. Included patients will be those with known or presumed hypercoagulable conditions. Patients who received bridging with an indication other than hypercoagulable state, including atrial fibrillation and mechanical valves, will be excluded. An electronic chart review will be performed on patients who meet inclusion criteria to collect pertinent data relating to bridging procedure and outcomes. Data collected will include hypercoagulable state, procedure type, anticoagulation agent and dose used, concomitant medications, pertinent labs, and outcomes including bleeding and thromboembolic events. Outcomes will then be analyzed to determine if choice of bridging regimen impacted outcomes.

Results: Research in progress.

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Evaluative Study

Session-Board Number: 1-245

Poster Title: Off-label Use of Trazodone and Mirtazapine in the Community Living Center (CLC)

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Purpose: The purpose of this medication use evaluation was to assess the prevalence of and factors associated with off-label use of antidepressants in the CLC. The primary objective was to perform a drug regimen review for each resident of concomitant psychoactive medications and all medication side effect profiles. The secondary objective aimed to explore the efficacy of trazodone or mirtazapine for insomnia and the efficacy of mirtazapine for appetite stimulation.

Methods: The hospital's computerized patient record system was used to perform a retrospective chart review of CLC residents who received at least one dose of trazodone and/or mirtazapine from July 2015 to June 2016. Residents were excluded for any of the following reasons: length of stay less than 30 days, palliative care admission, or indication other than insomnia or appetite stimulation. For the primary objective, medication administration records were reviewed for concomitant psychoactive medications and those received four weeks prior to initiation of trazodone or mirtazapine. For insomnia, the chart reviews specifically focused on antipsychotics, antidepressants, sedative hypnotics, benzodiazepines, and first generation antihistamines. Furthermore, for appetite stimulation, the charts were also reviewed for medications used as appetite stimulants (e.g. dronabinol, megestrol, dexamethasone). Additionally, Micromedex was used to review the side effect profiles of all medications administered during each resident's respective evaluation period, specifically focusing on drowsiness, fatigue, weight gain, or appetite stimulant properties. For the secondary objective, geriatric psychiatry and primary provider notes were reviewed for a four week period after initiation for insomnia or a twelve week period after initiation for appetite stimulation for documentation of efficacy. Additionally, the number of nutrition notes and all recorded weights

were collected for mirtazapine, regardless of indication. Descriptive statistics were used to evaluate the data.

Results: During one year, 92.1% (35/38) of prescriptions for trazodone or mirtazapine were for an off-label indication. The average CLC resident in this evaluation was a geriatric male with an average stay of 772 days. A total of 16 patients were included for further analysis. On average, residents received nine concomitant medications. Overall, 50% (8/16) of residents received concomitant psychoactive medications, with 62.5% (5/8) of those residents receiving more than one psychoactive medication. The majority were antipsychotics and antidepressants. Several medications were reported in Micromedex to cause sedation, somnolence, and fatigue. A few were also reported to cause increased appetite or weight gain. Of note, three residents received zolpidem and two received melatonin prior to starting trazodone or mirtazapine. Only 18.2% (2/11) of geriatric psychiatry notes and 9.3% (7/75) of nurse practitioner notes described the efficacy of trazodone or mirtazapine. The majority 87.5% (7/8) of the mirtazapine residents had recorded weights. Overall, trends in recorded weights showed weight loss for all but one resident. There was no mention of discontinuing mirtazapine noted for any resident.

Conclusion: Our results provide insight into the prescribing patterns in the CLC regarding off-label use of trazodone and mirtazapine for insomnia and appetite stimulation. There was a high rate of off-label prescribing with multiple concomitant psychoactive medications and medications with potential side effects. Limited documentation on efficacy was available to justify continuation of the medications. Additionally, residents on mirtazapine showed a weight loss trend with no discontinuation for inefficacy. Therefore, education will be provided to the prescribers and nursing staff in the CLC on the importance of monitoring efficacy of trazodone and mirtazapine, and ultimately discontinuing the medications for treatment failure.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 1-246

Poster Title: Evaluation of expedited partner therapy in patients with Chlamydia trachomatis

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Purpose: Chlamydia trachomatis is a common sexually transmitted disease (STD) that can be treated with a single oral dose of azithromycin 1g. Effective strategies to combat the spread or recurrence of infections include partner referral by the patient or provider. The CDC recommends expedited partner therapy (EPT) as an alternative in which prescriptions or medications are provided to the patient for his/her partner(s). The purpose of this medication use evaluation was to determine if EPT decreased recurrent chlamydial infections. Overall chlamydial reinfection and STD infection rates, prescribing practices, clinical management, and counseling by providers at the institution were also assessed.

Methods: The institution's computerized patient record system was used to perform a retrospective chart review of outpatient orders for azithromycin from July 2015 to June 2016. Patients were included if a prescription for azithromycin greater than or equal to 1g was received for a diagnosis of chlamydia. The primary outcome was the number of recurrent chlamydial infections within 12 months in those who received EPT. The secondary outcome was the number of chlamydial reinfections and STD infections within 12 months among the sample population. Patient specific time frames for evaluation started from the initial date azithromycin was dispensed to one year post-treatment. The appropriateness of dosing, patient-facilitated partner notification, repeat testing after treatment, and reported symptoms were also examined. Descriptive statistics were used to analyze the data.

Results: Of the 286 prescriptions reviewed, only 29 met inclusion criteria. According to the dose of azithromycin dispensed, 5/29 appeared to have received EPT; however, only one documented that partner therapy was prescribed without any subsequent reinfection within 12

months. Overall, 3/29 had documented recurrent chlamydial infections, all of whom received 1g. Two patients had documented gonorrheal infections within 12 months. As expected, most of the prescriptions for azithromycin were appropriately dosed; however, three of the 2g orders were written with instructions as a single dose. Provider documentation of advice for patient-partner(s) notification was found in 11/29 charts reviewed. Documentation of a repeat STD test within 12 months of treatment was found in 14/29 charts. The most commonly reported symptoms included discharge (7/33), painful urination (7/33), and other symptoms (3/33). Surprisingly, 13 charts had no documentation of symptoms and three patients were asymptomatic.

Conclusion: This medication use evaluation appears to demonstrate that EPT decreased recurrent chlamydial infections although only one instance of EPT was documented. Some patients treated with a single oral dose of azithromycin 1g were reinfected. Increase provider awareness of EPT and better documentation of advice for patient-partner(s) notification are warranted.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 1-247

Poster Title: Evaluating the efficacy and tolerability of abiraterone acetate and enzalutamide in a veteran population

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Purpose: The purpose of this medication use evaluation was to assess the efficacy and tolerability of abiraterone acetate (Zytiga) and enzalutamide (Xtandi) in veterans with metastatic castration-resistant prostate cancer at the medical center. The primary objective was to evaluate the PSA response rate, defined as the number of patients with at least a 50% reduction in PSA levels at four weeks after initiation of each agent. The secondary objectives were to assess the duration of therapy and report documented adverse drug events, reasons for treatment discontinuation, and subsequent therapies.

Methods: This medication use evaluation was a retrospective chart review using the Veteran Health Administration's computerized patient record system. A computer-generalized list of all outpatient prescriptions for abiraterone acetate and enzalutamide from April 2011 through December 2015 was reviewed. Patients were included if they picked-up at least one prescription for either medication prior to December 2015. Patients were excluded if their primary oncologist practiced outside of the institution (characterized as dual-care patients), medication was initiated during hospital admission or continued from an outside facility, and if patients had a documented compliance issue in the progress note or were lost to follow-up. The non-formulary medication consults and outpatient hematology/oncology progress notes were reviewed to collect information such as patient demographics and clinical characteristics, prior therapies for prostate cancer, reported adverse drug reactions (ADRs), reasons for discontinuation, and subsequent therapies as of June 30, 2016. For patients who tried both abiraterone and enzalutamide, their response to each medication was assessed separately for

the purpose of reporting the study's outcomes. Subgroup analyses were conducted to assess PSA response and duration of therapy in chemotherapy-naïve patients, chemotherapy-experienced patients, and in those who were treated with both abiraterone and enzalutamide.

Results: Of the 89 outpatient prescriptions screened, 32 (74.4%) abiraterone and 11 (25.5%) enzalutamide prescriptions were included in this evaluation. All (except one) enzalutamide patients had tried abiraterone prior to enzalutamide, and thus a total of 33 patients overall were included in this evaluation. Sixteen (50%) abiraterone patients achieved the primary endpoint, compared to 2 (18.2%) in the enzalutamide group. The mean duration of therapy for abiraterone and enzalutamide was 12.1 months and 6.1 months, respectively. The most common ADRs were: edema, weight loss, and fatigue with abiraterone, and fatigue, hypertension, and diarrhea with enzalutamide. One patient taking abiraterone was admitted to the hospital for congestive heart failure of unknown origin. Rising PSA was documented as the main reason for treatment discontinuation (63% abiraterone and 30% enzalutamide). For subsequent therapy, 40.7% of abiraterone patients who discontinued treatment tried enzalutamide, while 60% of enzalutamide patients went on to pursue supportive care. Half of both chemotherapy-naïve and experienced patients receiving abiraterone exhibited a PSA response at 4 weeks. In the enzalutamide group, 28.6% of chemotherapy-naïve patients and none of the chemotherapy-experienced patients achieved a response. Of the ten patients who tried both medications, 20% achieved a PSA response with enzalutamide.

Conclusion: At our institution, the majority of patients were treated with abiraterone first, followed by enzalutamide. Patients exhibited a more favorable response with abiraterone, as indicated by the higher rate of those achieving the primary endpoint and longer treatment duration. This may be due to its use earlier in the course of the disease or an acquired resistance predicting treatment failure with subsequent enzalutamide, as suggested in recent studies. Based on documentation in the outpatient hematology/oncology notes, most treatments were discontinued based on rising PSA only, which is not consistent with the VA criteria listed for use of each agent.

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 1-248

Poster Title: Evaluation of treatment outcomes after sustained virologic response in hepatitis C patients with cirrhosis or advanced fibrosis treated with interferon-free regimens

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Purpose: Prolonged inflammation of the liver due to chronic hepatitis C virus (HCV) infection can be associated with devastating outcomes, such as cirrhosis and hepatocellular carcinoma (HCC). Such complications can lead to increased rates of hospitalizations and increased mortality. Studies have demonstrated that complications are less frequent in patients who were successfully treated for HCV; however, most of this data is derived from patients treated with interferon (IFN)-based regimens. The objective of this retrospective review is to examine outcomes in patients with cirrhosis or advanced fibrosis after successful HCV eradication with IFN-free regimens.

Methods: A retrospective chart review was conducted, examining patients diagnosed with HCV, cirrhosis or advanced fibrosis, and who were successfully treated with an IFN-free regimen. Cirrhosis or advanced fibrosis was defined as a METAVIR score of F3 or greater obtained by transient elastography (FibroScan, Echosens, Paris, France). Treatment success was defined as sustained virologic response at 12 weeks (SVR12), plus or minus 2 weeks, post-treatment. Included patients required a minimum follow-up length of 365 days from SVR12 to time of data collection. Patients were excluded if they were diagnosed with HCC prior to treatment, had a history of hepatitis B co-infection, or were lost to follow-up after treatment. Endpoints included all-cause mortality, number of hospitalizations, number of hospitalizations directly attributed to liver disease, change in liver enzyme and liver function tests, proportion of patients with worsening fibrosis/cirrhosis, change in Child-Turcotte-Pugh (CTP) score, diagnosis of HCC post-treatment, and proportion of patients requiring liver transplantation post-treatment.

Results: Fifty two patients were included in the review (45 cirrhotic; 7 advanced fibrosis). Five (11%) of the 45 cirrhotic patients had symptoms of decompensation prior to treatment. The average length of follow-up from SVR12 was 514 days. Four (8%) patients had expired at the time of data collection; one patient's cause of death was attributed to liver disease. Twenty (39%) patients were hospitalized at least once after SVR12 for a total of 32 separate hospitalizations. Eight (25%) of those hospitalizations were attributed to liver disease. There was a statistically significant decrease in aspartate transaminase and alanine transaminase levels ($p < 0.001$, $p < 0.001$, respectively), and increase in albumin and platelet levels ($p < 0.001$, $p=0.035$, respectively) after SVR12. There were no significant changes in alkaline phosphatase, total bilirubin, prothrombin time, or international normalized ratios. None of the patients with advanced fibrosis progressed to cirrhosis, while two (5%) patients with compensated cirrhosis progressed to decompensated cirrhosis after SVR12. The average CTP score was 5.4 pre-treatment and 5.5 after SVR12 ($p=0.205$). Only one patient was diagnosed with HCC after SVR12. No patients received nor are in consideration for a liver transplant.

Conclusion: Patients with cirrhosis or advanced fibrosis who were successfully treated with IFN-free regimens had a statistically significant decrease in aspartate transaminase and alanine transaminase levels, along with a significant increase in albumin and platelet levels. Risk for liver-related morbidity and mortality appears to be low; only one patient expired due to liver-related complications and only one patient developed HCC after SVR12. No significant change in CTP scores was observed. The results of this review quantify the benefits HCV eradication may have on patients with cirrhosis or advanced fibrosis successfully treated with IFN-free regimens.

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 1-249

Poster Title: Evaluation of chronic hepatitis C virus treatment failures with direct-acting antiviral regimens in veterans

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Purpose: Chronic hepatitis C virus (HCV) affects an estimated 3.3 million people in the United States. Data suggest that HCV infection has a higher prevalence among the veteran population as compared to the general U.S. population. In the past, treatment was largely dependent on interferon-based regimens, which are associated with numerous adverse events and suboptimal treatment success rates. The new direct-acting antivirals (DAAs) have modernized chronic HCV treatment with improved tolerability and sustained virologic response rates. The purpose of this study was to explore patient-specific factors that may contribute to the failure of HCV treatment with DAA regimens.

Methods: A retrospective chart review of all subjects at the James J. Peters VA Medical Center with hepatitis C virus (HCV) who had failed a DAA regimen was performed. Subjects that received prescriptions between January 2014 and March 2016 for the following DAA regimens, with or without ribavirin, were evaluated: elbasvir/grazoprevir, ledipasvir/sofosbuvir, ombitasvir/paritaprevir/ritonavir with or without dasabuvir, sofosbuvir with simeprevir, sofosbuvir with daclatasvir, or sofosbuvir with ribavirin. Failure of any DAA regimen, defined as failure to achieve a sustained virologic response (SVR) 12 weeks after completion of therapy, was a requirement for inclusion in the study. The exclusion criteria consisted of any antiviral regimen containing interferon or pegylated interferon and any subjects that expired before the end of treatment. Infectious disease clinic progress notes, imaging studies, and labs were analyzed through the electronic medical record. Pertinent data including previous history of failed treatment, HCV genotype, HCV RNA levels, liver function tests, diagnosis of

hepatocellular carcinoma, and history of polysubstance abuse were collected. Concurrent prescriptions for gastric acid-reducing agents were noted, as well as relevant drug-drug interactions. Descriptive statistics were utilized to analyze the results.

Results: The electronic medical records of 25 subjects that failed HCV treatment with DAAs were analyzed. Four of these subjects were excluded; two failed regimens containing pegylated interferon and another two expired before completion of therapy. Of the 21 subjects included, 12 received ledipasvir/sofosbuvir. Simeprevir with sofosbuvir, ledipasvir/sofosbuvir with ribavirin, and ombitasvir/paritaprevir/ritonavir with dasabuvir represented 5, 3, and 1 out of the 21 subjects, respectively. Eleven subjects experienced relapse of hepatitis C virus after achieving undetectable HCV RNA at the completion of therapy. Two subjects experienced breakthrough of HCV RNA during the course of therapy. Six subjects did not complete therapy due to perceived or reported adverse events from the DAA prescribed. Another two subjects were lost to follow up during treatment and unable to complete DAA therapy. All subjects evaluated had a Child-Pugh score of A at initiation of therapy and expressed genotype 1. Twelve subjects were treatment experienced and 9 were treatment naïve. Eight subjects had stage F4 cirrhosis and one subject had a diagnosis of hepatocellular carcinoma. Twenty patients had a positive history of polysubstance abuse. Four subjects had active prescriptions for omeprazole and ledipasvir/sofosbuvir concurrently.

Conclusion: Similarities among subjects that experienced HCV treatment failure on DAA regimens include polysubstance abuse and stage F4 cirrhosis. Several subjects reported adverse events from DAAs and subsequently discontinued therapy. Treatment failure with DAAs did not appear to be affected by past treatment experience. This evaluation offers some guidance for our providers when subjects are screened prior to initiation of DAA therapy to assess risk of DAA treatment failure.

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-250

Poster Title: Evaluating the effect of insulin delivery method on glycemic control in patients with type 2 diabetes in a veteran population

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Purpose: The purpose of this medication use evaluation was to determine if the insulin delivery method impacts the change in A1c in insulin-naïve patients. The primary objective was to evaluate the change in A1c 12 months after initiation. The secondary objectives were to evaluate the number of hypoglycemic or hyperglycemic episodes documented in the patient charts and to assess the percentage of patients achieving an A1c of 9 percent or less.

Methods: This retrospective chart review was conducted to evaluate all outpatient prescriptions for basal insulin from July 2014 to June 2015. The basal insulins evaluated included insulins glargine and detemir. Insulin-naïve type 2 diabetic patients with a designated primary care provider at the facility, and receiving insulin therapy for a minimum of one year were included. Dual care patients and patients seen by a pharmacist from the primary care team or endocrine clinic were excluded. The study period was individualized starting from the date of insulin initiation followed forward for one year. The A1c upon insulin initiation was obtained and compared with the average A1c over one year. Documented hypoglycemic or hyperglycemic events were analyzed via a chart review of progress notes. Hypoglycemia was defined as blood glucose less than 70 mg/dL and hyperglycemia was defined as blood glucose > 200 mg/dL. In addition, the number of patients achieving an A1c of 9 percent or less was collected. Descriptive statistics were used to analyze the data.

Results: A total of 145 patients were included for evaluation. Of the 145 patients evaluated, 37 patients met the inclusion and exclusion criteria and were further analyzed. Twenty patients were initiated on insulin vials and 17 on an insulin pen. For the primary outcome, those

prescribed insulin vials and insulin pens experienced an average decrease in A1c of 1.9 percent and 2.1 percent respectively. For the secondary outcomes, 45 percent of the patients on vials and 41 percent of the patients on pens had a documented hypoglycemic or hyperglycemic event. Of the patients on vials and pens, 25 percent and 12 percent had a hospital admission respectively. An A1c greater than 9 percent was documented in 12 and 13 patients initiated on insulin vials and pens respectively. An A1c of less than 9 percent was achieved in 65 percent of patients on vials and 88 percent of patients on pens.

Conclusion: The results demonstrate that the delivery method of insulin did not have a significant impact on the change in A1c within one year of insulin initiation. Although patients on vials experienced more hospitalizations, the number of hypoglycemic and hyperglycemic events were comparable. However, more patients achieved an A1c of less than 9 percent in the insulin pen cohort. A longer follow up and a more interdisciplinary approach to treating diabetes may have had a greater impact on the results.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-251

Poster Title: Retrospective evaluation of warfarin bridging in veterans with atrial fibrillation at Northport Veterans Affairs Medical Center

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Purpose: This quality improvement project is to assess the necessity of bridging patients who have atrial fibrillation and whether we can improve patient outcomes by optimizing medication therapy. This study is based on two recent trials published in the New England Journal of Medicine and Circulation that have assessed forgoing anticoagulant bridging in patients who have atrial fibrillation after warfarin therapy interruption due to elective procedure. In both of these trials, the use of routine bridging was not supported by concluding data.

Methods: Patients will be identified using the medical center's electronic medical records system. A retrospective chart review will be conducted on patients aged 18 years or older who are receiving warfarin therapy for atrial fibrillation in the outpatient anticoagulation and primary care clinics. The primary outcomes of this study are the number of patients who have had incidents of arterial thromboembolism, major bleed, or hospitalization within 30 days following elective procedure related to dosage of injectable anticoagulation therapy. Patients will be categorized into three different groups based on injectable anticoagulation therapy: prophylaxis, treatment, or no bridging.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-252

Poster Title: Retrospective evaluation of oral hepatitis C medication therapy outcomes at Northport Veterans Affairs Medical Center

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Purpose: Although, the new oral direct antiviral agents (DAA) are highly effective and well tolerated for hepatitis c treatment, lack of compliance and monitoring can contribute to hepatocellular complications, viral resistance, or need for additional therapy, significantly impacting healthcare or economic burden. This quality assurance project will assess and evaluate hepatitis C virus (HCV) therapy outcomes among the seven DAAs available (ledipasvir/sofosbuvir, ombitasvir/paritaprevir/ritonavir/dasabuvir, elbasvir/grazoprevir, daclatasvir, ombitsavir/paritaprevir/ritonavir, sofosbuvir, sofosbuvir/velpatasvir). The results from this study may demonstrate the need for more stringent monitoring and emphasize the vital role of clinical pharmacist involvement when prescribing DAAs at the medical center.

Methods: Patients will be identified using the medical center's electronic medical records system. A retrospective chart review will be conducted from October 1, 2015 to September 30, 2016. This study will include all outpatients with a documented hepatitis C virus (HCV) genotype, who have completed direct-acting antiviral (DAA) therapy prescribed by gastrointestinal (GI) or infectious disease (ID) providers. Patients will be excluded if they have a coinfection with human immunodeficiency virus, hepatitis B virus, if they did not complete therapy or could not obtain their HCV RNA levels by September 30, 2016. Successful therapy will be determined by sustained virologic response (SVR), defined as an undetectable HCV RNA, 12 weeks after the end of treatment. HCV therapy outcomes will be determined by rates of success or failure among the seven DAA agents. Contributing factors to therapy failure will be further assessed by rates of noncompliance, documented adverse drug reactions, drug-drug interactions, and loss of patient follow-up.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-253

Poster Title: Use of vancomycin in Veterans' Affairs patients who have previously experienced vancomycin-associated acute kidney injury (AKI): Predictors and outcomes of secondary vancomycin-associated AKI

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Purpose: Acute kidney injury (AKI) is a well-known exposure-related adverse effect of vancomycin. For these patients who require subsequent courses of vancomycin therapy, it is unclear if vancomycin is safe to utilize. Specifically, the incidence of secondary vancomycin-associated AKI is unclear. The objectives of this study were to 1) quantify the incidence of secondary vancomycin-associated AKI and 2) determine clinical/demographic risk factors associated with secondary vancomycin-associated AKI among Veterans' Affairs patients who have previously experienced AKI during primary vancomycin usage.

Methods: A retrospective cohort study was performed among patients receiving care in the Upstate New York Veterans' Healthcare Administration (VISN-2). Inclusion criteria were: 1) age ≥ 18 years, 2) two courses of vancomycin therapy for ≥ 48 hours between 2000 and 2015, 3) had vancomycin serum concentrations within 5 days of initiating therapy, 4) experienced AKI during primary vancomycin therapy and 5) not receiving dialysis. Trained reviewers abstracted the following variables from patients' electronic medical records: demographics, laboratory values, antibiotic therapy, concomitant nephrotoxic medication use, comorbidities, history of healthcare exposure, and course of hospitalization. Disease severity and underlying health status were captured using the Acute Physiologic Assessment and Chronic Health Evaluation (APACHE) II Scoring System and Charleston comorbidity index, respectively. Serum creatinine values were captured starting 5 days prior to each vancomycin usage through 10 days post-completion of therapy. Creatinine clearance was calculated using the Cockcroft Gault method.

All vancomycin serum concentrations were collected. To estimate the steady-state trough concentration and area under the concentration-time curve, a series of 5000-subject Monte Carlo simulations were performed. The main study outcome was the presence of AKI, defined as an acute rise in serum creatinine of ≥ 0.5 g/dL or a 50% decline in creatinine clearance

Results: In progress

Conclusion: In progress

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-254

Poster Title: Quality Assurance Alcohol Monitoring by Urine Ethyl Glucuronide Screen in Patients Receiving Chronic Opioid Therapy (COT)

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Purpose: Urine Drug Screening is an important risk mitigation tool when monitoring COT consistent with various guidelines. [1-5] SAMHSA's Drug Abuse Warning Network identified 438,718 opioid-related emergency department visits of which 81,365 (18.5%) involved alcohol . Of almost 4000 opioid-related deaths, 22.1% involved alcohol. These statistics support alcohol monitoring with the standard immunoassay panel for patients on COT. Our purpose is to enhance patient safety, and prospectively minimize opioid risks by employing ethyl glucuronide testing. Laboratory findings will be used to ensure appropriate alcohol counseling, COT and other sedative-hypnotic dose reduction or elimination, and to support routine alcohol testing routinely.

Methods: This quality assurance project will be conducted at the Samuel S. Stratton VA Medical Center. All chronic non-cancer patients receiving chronic opioids should have consented to urine drug monitoring, including alcohol, according to VA policy in accordance with the nationally approved "Consent for Long-term Opioid Use". All non-cancer patients within the last 6 months that received COT (≥3 months) plus or minus a benzodiazepine will be screened and included in the study. Additionally, the study will sequester data for opioid-consent forms, previous ethyl glucuronide urine testing, and urine drug screening within the last year. All opioids will be included except for buprenorphine of any type, tramadol, butorphanol, or pentazocine. 347 patients have been identified as potential candidates for routine monitoring for alcohol use by ethyl glucuronide urine testing. This study will identify patients receiving chronic opioid therapy missing up-to-date signed Consent for Long-term Opioid Use, track which patients have been monitored for alcohol use by ethyl glucuronide, and ensure that such patients have an order for such monitoring. Additionally, urine drug screens will be updated if the patient did not have one within the last year.

Results: Results in progress

Conclusion: NA

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-255

Poster Title: Comparison of stroke, embolism, and bleeding in veterans treated with direct oral anticoagulants for nonvalvular atrial fibrillation to rates reported in RE-LY, ROCKET-AF, and ARISTOTLE

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Purpose: Use of direct oral anticoagulants (DOACs) in veterans has increased over the past five years with their approval to the national formulary. While their efficacy and safety endpoints have been well documented in clinical trials, the populations represented in these trials often differ from the veteran population. This project was designed to compare the event rates of stroke, embolism, and major bleeding in veterans treated with a DOAC for nonvalvular atrial fibrillation (NVAF) to the event rates reported in the three major DOAC clinical trials RE-LY, ROCKET-AF, and ARISTOTLE.

Methods: This will be a retrospective chart review of veterans treated with a DOAC for NVAF between the dates of 12/01/2010 to 08/30/2015. Patients who received the following DOACs will be included in the study; Dabigatran, Rivaroxaban, and Apixaban. Patients treated with a DOAC for an indication other than NVAF will be excluded. To compare baseline characteristics of the veteran population to the trial population, the following data will be collected; age, sex, race, weight, height, BMI, serum creatinine, CHA2DS2VaSc/CHADS2, DOAC dose, directions, and duration, and use of Aspirin, P2Y12 inhibitors, or NSAIDs. The efficacy endpoint will be a composite of stroke and embolism events including ischemic and hemorrhagic stroke, transient ischemic attack, deep vein thrombosis, and pulmonary embolism. The safety endpoint will be major bleeding events, defined as a clinically overt bleed involving a critical anatomic site, fall in hemoglobin less than 2 g/dl, or transfusion of greater than 2 units. The mean and median of the veteran baseline characteristics will be calculated using descriptive statistics. The rate of events per patient per year will be calculated for the efficacy and safety outcomes. These results will be compared to the results reported in the RE-LY, ROCKET-AF, and ARISTOTLE trials.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-256

Poster Title: Impact of antidepressants on dosing of concomitant opioids and benzodiazepines

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Purpose: The Food and Drug Administration will soon require boxed warnings on opioid and benzodiazepine labeling with information detailing the risks associated with using these medications at the same time. The objective of this study is to assess factors that may lead to decreased dosing of opioids and benzodiazepines in veterans. The study will determine the extent to which antidepressant use impacts daily dosing equivalents of concurrent opioids and benzodiazepines and whether outcomes in dosing are affected by the type of providers that are generating the antidepressant and benzodiazepine prescriptions.

Methods: A survey of 200 veterans who received at least two outpatient prescriptions for both an opioid and a benzodiazepine in the 90 days preceding the cohort collection date will be identified. Data collected will include identification of an antidepressant prescription filled for a minimum of a 30-day supply during the 90 days preceding the collection date. Data will also include identification of the providers that generated the antidepressant and benzodiazepine prescriptions. Subjects will be assigned to two cohorts based on presence or absence of an antidepressant prescription. Diazepam equivalent daily dose and morphine equivalent daily dose will be calculated for each subject's daily benzodiazepine and opioid dose. Daily equivalent doses will then be compared between the two cohorts. Antidepressant and benzodiazepine prescriptions will be assessed according to whether they were generated by behavioral health or primary care providers. Average daily doses of opioids and benzodiazepines will be compared between subjects based on whether the antidepressant and benzodiazepine prescriptions were generated by primary care or behavioral health providers. Data from the study will be used to formulate recommendations when the pharmacy is required to sign off on concurrent opioid and benzodiazepine orders.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 1-257

Poster Title: Medication use evaluation of pregabalin three times daily (TID) within a Veterans Affairs (VA) medical facility

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Purpose: Pregabalin has multiple Food and Drug Administration (FDA) approved indications, and is dosed either twice daily (BID) or three times daily (TID) depending on the indication. Pregabalin is a flat-priced medication. The FDA approved dosing of pregabalin is TID for diabetic peripheral neuropathy (DPN), BID or TID for postherpetic neuralgia (PHN) or adjunctive therapy for adult patients with partial onset seizures, and BID for fibromyalgia or neuropathic pain associated with spinal cord injury. The purpose of this study was to evaluate appropriateness of the TID dosing schedule based upon indication for use and to identify potential for cost avoidance.

Methods: A retrospective chart review was conducted at a Department of Veterans Affairs (VA) medical facility. Veterans with an active outpatient prescription for pregabalin TID on June 29, 2016 were included in the study. Data was collected on the indication for use and analyzed to determine the appropriateness of the TID dosing schedule.

Results: A total of 33 Veterans prescribed pregabalin TID were identified. Eleven Veterans (33.3%) had a documented indication for DPN. None of these Veterans were prescribed pregabalin for PHN or adjunctive therapy for partial onset seizures. The remaining 22 Veterans (66.7%) were prescribed pregabalin for varying off-label indications, including: non-diabetes-associated neuropathic pain (24.2%), lower back pain (6.1%), peripheral nerve disease cervicalgia (6.1%), dysesthesia (6.1%), unspecified pain (6.1%), post laminectomy syndrome (6.1%), radiculopathy (6.1%), spinal stenosis (6.1%), syringomyelia (6.1%), thalamic pain (6.1%), traumatic amputation (6.1%), and trigeminal neuralgia (6.1%). Two Veterans (6.1%) had active

prescriptions for two capsules per dose rather than one capsule per dose when that strength was commercially available.

Conclusion: Eleven Veterans (33.3%) had appropriate TID dosing schedules for their prescribed indications. There may have been opportunity to treat 22 Veterans (66.7%) with pregabalin BID dosing and a potential for cost avoidance. There was also a potential for cost avoidance for 2 Veterans (6.1%) who were prescribed two capsules per dose. Now that pregabalin is included on the VA National Formulary, measures are underway at this medical facility to aid prescribers in selecting the appropriate FDA approved pregabalin dosing schedule based upon indication.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 1-258

Poster Title: Evaluating the appropriate use of clotrimazole topical solution

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Purpose: Onychomycosis and tinea pedis are common fungal infections. The first-line treatment for onychomycosis is oral terbinafine, which is associated with a higher cure rate and a shorter duration compared to topical therapy. The first-line treatment for tinea pedis is topical anti-fungal medications. Clotrimazole, an anti-fungal medication is available as a topical product, where the duration of treatment should not exceed four weeks. The utilization of clotrimazole topical solution at a Department of Veterans Affairs medical facility is increasing and associated with significant healthcare costs. This study was designed to evaluate the appropriateness of clotrimazole topical solution prescribing.

Methods: A retrospective chart review was performed of outpatient clotrimazole topical solution orders dispensed between January 1, 2016 and June 30, 2016. A seven percent randomized sample was selected and evaluated to determine the appropriateness of clotrimazole topical solution prescribing, including indication, dosing frequency, duration, and prescriber. Appropriateness was assessed according to four medical databases, which were Lexicomp, Micromedex, Up-To-Date, and Dynamed.

Results: Seven hundred and twenty-two clotrimazole topical solution orders were identified and fifty orders were randomly selected for evaluation. Thirty-six (72 percent) patients were prescribed clotrimazole solely for onychomycosis, one (2 percent) patient solely for tinea pedis, ten (20 percent) patients for both onychomycosis and tinea pedis, and three (6 percent) patients did not have a documented indication. Fifty (100 percent) patients were prescribed clotrimazole at the appropriate dosing frequency of twice daily. Thirty-three (66 percent) patients were found to be inappropriately prescribed clotrimazole topical solution for a duration greater than four weeks. Forty-seven (94 percent) patients were followed by podiatry,

while only three (6 percent) patients were followed by primary care. The three patients that were followed by primary care were also the same patients that did not have a documented indication.

Conclusion: At a Department of Veterans Affairs medical facility, clotrimazole topical solution is primarily being prescribed for the treatment of onychomycosis, despite the availability of other first-line medications that offer shorter treatment courses, higher cure rates, and fewer relapses. In addition, clotrimazole topical solution is often prescribed for a longer duration than is recommended. To reduce the inappropriate prescribing of clotrimazole topical solution, steps have been proposed at a Department of Veterans Affairs medical facility to limit refills/renewals on these orders and ensure that the patient returns for follow-up.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-259

Poster Title: Medication use evaluation of inpatient medication tablet-splitting within a Veterans Affairs (VA) medical facility

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Purpose: Tablet-splitting is a practice where tablets of higher strength are broken in half, or quarters, to provide lower doses for patients. This allows for a larger array of medication doses and may allow for improved patient care by facilitating titration and/or customized dosing. Furthermore, studies have shown that medication costs can be substantially reduced by implementing tablet-splitting strategies. However, ASHP encourages limiting medication dose manipulations to reduce errors due to order misinterpretation, in addition to concerns with variability of tablet fragments. The objective of this study is to evaluate the clinical appropriateness of inpatient medication tablet-splitting.

Methods: A retrospective chart review was conducted at a VA medical facility of all inpatient medication orders for half-tablet and quarter-tablet medication doses between August 1, 2015 and August 1, 2016. Data collected included the medication and dose administered to each unique patient, time of administration, inpatient unit, as well as patient demographics. Furthermore, orders were analyzed to determine the appropriateness of medication tablet-splitting, including: indication, previous dosing history, and justification. Clinical justification of medication tablet-splitting is categorized into three categories: no documented justification, clinical justification with supporting evidence, and clinical justification without supporting evidence. Medications provided as half-tablet or quarter-tablet doses were evaluated for tablet-splitting suitability through physical characteristics of the tablets, scoring and size of the tablet, as well as if the medication is considered to have a narrow therapeutic index.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-260

Poster Title: Overutilization of omeprazole for the treatment of gastroesophageal reflux disease (GERD) at the New York Harbor Healthcare System

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Purpose: Proton pump inhibitors (PPIs) are commonly used at higher doses and/or for a longer treatment duration than recommended without appropriate follow-up. Recent medical journals and research have shown long-term use of PPIs may be associated with hip fractures, osteoporosis, community acquired pneumonia (short-term use), Clostridium difficile colitis, spontaneous bacterial peritonitis in patients with decompensated liver disease, increased risk of myocardial infarction, chronic kidney disease, and dementia. The primary objective of this study is to determine the overutilization of omeprazole for the treatment of GERD in an outpatient Veterans Affairs (VA) setting.

Methods: This study is pending approval by the Institutional Review Board. This is a retrospective, computerized database (CPRS) review with de-identified, summative data. All data will be password-protected behind a firewall on secured VA servers. Data will be collected from outpatient electronic medical records. The study will evaluate the incorrect usage of omeprazole in 100 subjects from October 1, 2015 to March 31, 2016. Incorrect usage is defined as exceeding the Food and Drug Administration (FDA) recommended dosage and/or duration of treatment for GERD without a referral to a gastroenterologist (GI) specialist after initial treatment. The dosage, duration of treatment, and GI consult will be recorded and evaluated based on the current FDA approved uses of omeprazole. Inclusion criteria are male and female subjects 18 years of age or older, treated at the VA as an outpatient, taking omeprazole with the diagnosis of GERD, and having at least a 90 day fill or 30 day fill plus one refill within 8 weeks. Exclusion criteria are noncompliance (2 nonconsecutive fills), omeprazole filled at a Non-VA facility, switched from a different PPI to omeprazole, and patients with active duodenal

or gastric ulcer bleed, erosive or Barrett's esophagitis, pathological hypersecretory conditions, or Helicobacter pylori eradication.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-261

Poster Title: Evaluation of appropriate empiric antibiotic prescribing in a United States veteran population with extended-spectrum beta-lactamase (ESBL)-positive urinary tract infection (UTI)

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Purpose: Urinary tract infections (UTI) are commonly seen in the inpatient and outpatient settings. Some of the antimicrobial agents that are routinely prescribed to treat UTI are becoming resistant. The emergence of antibiotic resistance is occurring worldwide. It is causing more severe infections, complications, longer hospital stays, healthcare costs, and increased mortality. The overuse and inappropriate use of antibiotics are associated with antibiotic resistance and adverse effects. The purpose of this study is to evaluate the appropriateness of empiric antibiotic therapy in patients with extended-spectrum beta-lactamase (ESBL)-positive urinary tract infections in a Veterans Affairs (VA) setting.

Methods: This study is pending approval from the Institutional Review Board. This will be a retrospective, computerized chart review study performed within the Veterans Affairs (VA) setting. 100 patients with a documented ESBL-positive UTI from June 2015 to June 2016 will be evaluated. The primary objective is to evaluate the appropriateness of empiric antibiotic therapy in patients with ESBL-positive urinary tract infections. The secondary objective is to examine the time to tailor the antibiotic regimen. Appropriate empiric antibiotic therapy is defined by prescriber selection of the correct empiric medication, dose, and duration of therapy. Antibiotic selected will be assessed to determine appropriateness whether it was narrowed/modified based upon previous culture results. The number of days to tailor antibiotic regimen will be assessed as well. Patients with asymptomatic bacteriuria who received antibiotics will also be reviewed for appropriateness. Asymptomatic bacteriuria is defined as an isolation of specified quantitative count of bacteria (at least 105 cfu/mL in 2 consecutive voided urine specimens in women or 1 urine specimen in men, or at least 102 cfu/mL of 1 catheterized urine specimen in men or women), in absence of clinical signs and symptoms suggestive of UTI.

Inclusion criteria are male and female subjects 18 years and older, with a documented diagnosis of ESBL-positive UTI. Exclusion criteria are patients who are in the intensive care unit, on hemodialysis, or chemotherapy.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 1-262

Poster Title: Factors predictive of relapse in patients treated for alcohol use disorder (AUD) in the substance use disorder medication management clinic

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Purpose: Alcohol use disorder (AUD) is a chronic relapsing disorder that is a significant contributor to injuries and chronic diseases including hypertension, heart disease, liver disease, cancers, and mental health conditions. Relapse is a common outcome for patients in treatment for AUD There are a variety of factors that may contribute to the likelihood of relapsing. The AUD Medication Management Clinic was established in 2014 to provide medication therapy for patients with AUD already engaged in individual or group counseling. This retrospective chart review aims to identify factors that may contribute to relapse in this population.

Methods: Veterans included in the analysis must be at least 18-years of age and must have been enrolled in the AUD Medication Management Clinic between October 2014 and August 2016. They must have had at least one month of treatment (at least one naltrexone long-acting injection or at least a 30-day supply of oral medication). Patients being treated for opioid use disorder will be excluded. A retrospective chart review will be performed using the electronic medical record. The dependent variable to be assessed is relapse (yes/no) and independent variables that will be evaluated as potential risk factors include age, sex, race, mental health diagnosis, treatment for mental health diagnosis, Brief Addiction Monitoring (BAM) total score and individual components, AUD treatment medication, medication adherence, duration of AUD (years), number of previous relapses, comorbid medical conditions, completion of 28-day program, completion of 90-day program, polysubstance abuse, support system, and ongoing counseling. Chi square analysis will be used to evaluate relationships between the dependent variable, relapse, and the various independent variables (broken out categorically). If sufficient data exists, logistic regression analysis will be used to determine the relationships between the various independent variables and the dependent variable. Significance will be accepted at $p <$

0.05. Length of therapy prior to relapse will be reported to determine whether there are differences in time to relapse with the different medication therapies.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-263

Poster Title: Returning patients to primary care for ongoing depression management following treatment in a psychiatric pharmacy medication management clinic at VA Western New York Healthcare System

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Purpose: Veteran access to mental health treatment has been a significant problem. At our institution, patients are often referred to psychiatry by primary care providers (PCPs) for treatment of depression, increasing treatment access problems. The Psychiatric Pharmacy Patient Aligned Care Team (PACT) Medication Management Clinic (PPPMMC) was implemented to increase Veteran access to medication therapy for depression. This clinic is a collaboration of psychiatric pharmacists and PACT providers. Patients are referred to the clinic with a goal of stabilization and return to their PCP for ongoing depression medication management within 16 weeks of starting therapy.

Methods: Veterans are referred to the PPPMMC by PCPs or mental health professionals in PACT, but are not always returned to their PCPs for ongoing antidepressant therapy within 16 weeks of initiating treatment. The purpose of this retrospective chart review is to determine factors associated with probability of returning Veterans to their PCP within 16 weeks. Veterans enrolled in the PPPMMC between August 2013 and August 2016 will be included if they had at least one follow-up visit within 16 weeks of the initial appointment. Chi square analysis will be used to determine factors predictive of the outcome, return to PCP (yes or no). The independent variables to be evaluated include patient demographics (age, sex, race), misdiagnosis at time of referral, current treatment resistance (non-response to two different antidepressants), noncompliance with medication (medication possession ratio less than 80 percent), noncompliance with follow-up appointments (attending less than 80 percent of scheduled visits), Patient Health Questionnaire-9 (PHQ-9) total and individual component scores, use of other psychotropic medications, number of previous antidepressant trials, substance abuse, comorbid medical and psychiatric conditions, psychotherapy, and

inappropriate continuation of services in the PPPMMC once stabilized. Continuous independent variables will be broken into categories. If sufficient data exists, logistic regression analysis will be used to determine the relationships between the independent variables and the dependent variable with significance accepted at p-value less than 0.05.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-264

Poster Title: Evaluation of Skin and Soft Tissue Infections in Hospitalized Veterans

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Purpose: This retrospective study aims to evaluate appropriateness of antibiotic treatment and duration as well as significant predictors of treatment failure of skin and soft tissue infections of inpatients treated in a Veteran's Affairs hospital. Secondary outcomes include the impact of age and obesity on treatment outcomes as well as to compare length of stay, treatment duration, and re-admission rates pre-stewardship and post-stewardship.

Methods: Patients aged 18-89 years old with an ICD-9 and ICD-10 code of cellulitis, abscess, mixed (cellulitis and abscess), erysipelas, acute lymphadenitis, and necrotizing fasciitis from January 1, 2005-July 1, 2016 will be included. The diagnosis will be confirmed via retrospective chart review and each patient will be included only on the first admission if multiple admissions were noted. Baseline characteristics, comorbidities, severity of illness, and risk factors will be compared using a bivariate model. Categorical data will be analyzed using the chi-square test whereas continuous data will be analyzed using the student's t-test. Significant factors will be built into a multivariate logistic regression model to determine the impact of variables on primary and secondary outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-265

Poster Title: Survey of bacteremia and endocarditis in a veterans affairs hospital

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Purpose: The diagnosis of bacteremia is often associated with increased length of hospital stay, morbidity and mortality among hospitalized patients. Some studies have reported gram-negative bacteremia to have a mortality rate ranging from 27-38 percent while other studies note a mortality of 10-30 percent in patients with Staphylococcus aureus bacteremia. By providing a survey of the incidence of bacteremia and endocarditis, we hope to determine if there is a correlation between population shifts in the types of the bacteremia and identifiable risk factors that may be associated with the diagnosis of endocarditis.

Methods: This retrospective cohort study will evaluate bacteremia and endocarditis in adult patients that were admitted to the Veterans Affairs Western New York Healthcare System during the years 2005 to 2016. The primary objective of this study is to identify the types and frequency of bacteremia and endocarditis. Secondary objectives include a comparison between pre and post antimicrobial stewardship implementation on patients' length of hospital stay, time to discontinuation of antibiotic therapy, readmission rates, mortality, and patient outcomes. Bivariate analysis will be used to determine the difference between success and failure for each of the outcomes. Significant factors will be built into a multivariate logistic regression analysis. For durations of treatment, a least squares regression will be utilized.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-267

Poster Title: Retrospective evaluation of Clostridium difficile infections in a veterans affairs hospital

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Purpose: C. difficile contributes to significant morbidity and mortality in hospitalized patients. There is reported evidence that the C. difficile polymerase chain reaction may over report true cases, when correlated clinically. The objective of this study is to compare the prevalence of active clinical C. difficile infection vs polymerase chain reaction positive C. difficile. Secondary objectives are to determine the impact of stewardship on C. difficile and to investigate various risk factors for C. difficile.

Methods: A retrospective cohort study of veterans with C. difficile infection between January 1st, 2006 and July 1st, 2016 will be performed. The primary endpoint will be to determine the incidence of polymerase chain reaction positive C. difficile without active clinical disease. Secondary endpoints include evaluating the impact of stewardship on C. difficile infections and determining risk factors for development of C. difficile. C. difficile will be defined as diarrhea plus a positive C. difficile test. Diarrhea is defined as 3 or more bowel movements or at least 600mL of rectal or colostomy output within 24 hours. Data collected will include baseline demographics, current and previous antibiotics received within the last 30 days, allergies, prior laxative use, and diarrhea. Descriptive statistics, percentages, and time series analysis will be performed. Significant factors will be built into multivariate logistic regression analysis to determine the risk factors for C. difficile. This retrospective cohort study has been approved by the local Veterans Affairs Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-268

Poster Title: A Retrospective Review of the Impact of the Socioeconomic and Psychosocial Factors on Success Rates of Hepatitis C Treatment

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Purpose: This study is a retrospective evaluation of psychosocial and socioeconomic factors in patients who received hepatitis C treatment through the Hepatitis C Clinic at a Veterans Affairs healthcare system. The purpose is to identify modifiable psychosocial or socioeconomic factors that can negatively impact hepatitis C treatment success. Mitigating such factors may contribute to increase chance of achieving sustained virologic response in the veteran population.

Methods: A retrospective chart review will be performed through the electronic medical record on patients who were initiated on hepatitis C treatment. Baseline data will be collected regarding patient demographics, comorbidities, baseline liver function, hepatitis C infection characteristics, and treatment regimens received. Socioeconomic and psychosocial characteristics will also be determined through review of provider and social work notes. Compliance throughout treatment will be assessed through review of provider notes. Finally, the end of treatment response and sustained virologic response, ≥12 weeks after the completion of treatment, will be assessed through detection of a hepatitis C viral load.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-269

Poster Title: Evaluation of prescribing practices in complicated outpatient urinary tract infections

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Purpose: Urinary tract infections (UTIs) remain one of the most common infections diagnosed in the United States in both the inpatient and outpatient settings. By definition, UTIs that occur in males are considered complicated, making these patients challenging to treat. This study will evaluate the appropriateness of antibiotic selection and determine significant predictors of appropriate treatment in UTIs in outpatient males. The purpose is to determine what factors are significant in driving inappropriate treatment in order to provide more data related to the outpatient treatment of UTIs in this population.

Methods: A retrospective chart review will be conducted to review the appropriateness of antibiotic selection and determine significant predictors of appropriate treatment in outpatient males with urinary tract infection. Secondary outcomes include the prevalence of various microbes, frequency of treatment in asymptomatic patients, duration of treatment, occurrence of adverse events and presence of imaging studies. Data will be retrospectively obtained the Computerized Patient Record System (CPRS). The years to be studied include 1/1/2005 to 7/1/2016. Baseline characteristics, baseline comorbidities, severity of illness and risk factors will be compared in a bivariate model. Significant factors will be built into a multivariate logistic regression model to determine the impact of variables on the primary outcome. Duration of therapy will be analyzed via least squares regression model to determine if there is a difference in all cause failure.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 1-270

Poster Title: Decreased mortality in patients prescribed vancomycin after implementation of a stewardship program

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Purpose: The purpose of this study was to evaluate the impact of an antimicrobial stewardship program on patient outcomes, specifically 30-day mortality, in patients prescribed vancomycin in a Veterans Affairs hospital. Literature evaluating the impact of antimicrobial stewardship has demonstrated importance in areas of resistance, cost savings, avoidance of adverse drug reactions, and toxicity of antibiotics. Mortality is a measurable objective that may shed light on additional benefits in terms of clinical outcomes from antimicrobial stewardship programs.

Methods: This was a retrospective chart review of patients, aged 18 to 89 years old, whom received a minimum of 48 hours of vancomycin at the Western New York VA Healthcare System in Buffalo, New York during the time period of October 1, 2006 to July 1, 2014. Data collection included baseline demographics, Charlson Comorbidity Index, admitting service, indication for treatment, microbiology, total duration of treatment, initial and maximum vancomycin trough, total length of stay and readmission to hospital within 30 days. A bivariate analysis were used to compare patients who died and those who survived within 30 days of vancomycin treatment. A second analysis was done to compare pre-antimicrobial stewardship program and antimicrobial stewardship program patients. Significant factors (p-value less than 0.05) from the bivariate analysis were built into a multivariate logistic regression analysis to determine impact of antimicrobial stewardship program on mortality. Results were presented as odds ratio with a 95% confidence interval.

Results: This study included 453 patients of which death occurred in 12.4% (56 patients). Of the 56 mortality events, 64.3% occurred during pre-stewardship years versus 35.7% during the stewardship years (p-value = 0.021). In a multivariate logistic regression, increased mortality was associated with pre-antimicrobial stewardship program years (OR 2.17; 95%CI 1.13-4.27), age (unit OR 1.08; 95%CI 1.05-1.12), nephrotoxicity (OR 3.24; 95%CI 1.27-8.01), and hypotension (OR 3.28; 95%CI 1.42-7.44). Patients treated in the intensive care unit were 3.5 times more likely to experience mortality when compared to medical patients. Medical patients were 7.4 times more likely to experience mortality when compared to surgical patients. Lastly, intensive care unit patients were 26.3 times more likely to experience mortality when compared to surgical patients.

Conclusion: Mortality in patients treated with vancomycin was decreased after antimicrobial stewardship was implemented. As to be expected, older age, hypotension, nephrotoxicity, and intensive care unit admission were associated with increased incidence mortality. Although they were non-concurrent time frames, this study demonstrates another potential benefit of antimicrobial stewardship programs.

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-271

Poster Title: Patient satisfaction of pharmacist provided care via clinical video teleconferencing

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Purpose: Patient satisfaction with the use of telehealth in disease state management provided by pharmacists has not been fully studied. We hypothesized that patient satisfaction with pharmacist-provided consultations via clinical video teleconferencing (CVT) would not differ from face-to-face delivery.

Methods: Patients were recruited from two primary care provider sites from September 2015 to May 2016. Patients completed a survey to evaluate their satisfaction and quality of provider-patient communication with the method in which consultation with a pharmacist was provided. The survey was a 10-item, patient-self reported questionnaire. The primary outcome evaluated patients' scores on assessment of the provider's use of patient-centered communication. Secondary outcomes evaluated patients' scores on assessment of the provider's clinical competence and skills, interpersonal skills, and convenience of the visit.

Results: There were a total of 57 surveys collected. For both the primary outcome and secondary outcomes, over 80% of collected responses for each question in both clinics were scored a 5 which indicates that patients were very satisfied with the provider's use of patient-centered communication and clinical competence and skills. For both the primary and secondary outcome, there were no statistically significant differences in patients scores that assessed provider's use of patient centered communication nor the providers' clinical competence and skill.

Conclusion: The results of this study indicate patients are satisfied with pharmacists' use of patient centered communication and clinical competence and skills via both CVT and face-to-

face consultations supporting our research hypothesis that patient satisfaction with care provided via CVT did not differ from face-to-face provided care.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-272

Poster Title: Impact of exenatide ER on hemoglobin A1C, weight, and total daily dose of insulin in patients with type 2 diabetes mellitus using U-500 insulin.

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Purpose: Use of glucagon-like peptide-1 receptor (GLP-1) agonists in combination with basal insulin is used in clinical practice; however, its use with U-500 insulin is not currently approved by the Food and Drug Administration. The primary objective will evaluate change in hemoglobin A1C over 24 months after addition of exenatide extended-release (ER) to U-500 insulin in Veteran's Affairs (VA) patients. The secondary objectives will assess the change in weight, total daily dose (TDD) of insulin, and reports of hypoglycemia from baseline to 24 months after the addition of exenatide ER.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a retrospective chart review of outpatients enrolled in a VA clinic. Patients will be identified through the Computerized Patient Record System and will be eligible if they have concomitant prescriptions for regular U-500 insulin and exenatide ER. The following data will be collected: patient gender, age, race/ethnicity, weight, body mass index hemoglobin A1C, TDD of insulin, hypoglycemic episodes, concomitant diabetes medications, and years since diagnosis of type 2 diabetes. Data will be de-identified to protect patient confidentiality. For the primary outcome, the mean A1C at baseline, 3, 6, 12, 18, and 24 months will be evaluated. For secondary outcomes, the mean weight and TDD of insulin at baseline, 3, 6, 12, 18, and 24 months will be evaluated. Any reports of hypoglycemia will also be recorded. Repeated measures ANOVA will be performed on the primary and secondary outcomes to assess the differences in mean scores over six time periods.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 1-273

Poster Title: Surgical Site Infection Prophylaxis: Using the Standard Antibiotic Administration Ratio to Identify Antimicrobial Stewardship Intervention and Improve Antimicrobial Use

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Purpose: The National Healthcare Safety Network (NHSN) allows medical facilities to report antimicrobial data through their Antimicrobial Use (AU) option. Facilities have access to metrics including Standardized Antibiotic Administration Ratios (SAARs), a novel metric for external comparison. SAARs are risk adjusted observed-to-expected ratios of antimicrobial use categorized into antimicrobial classes including agents used for surgical site infection prophylaxis (TAR-Adult-7) and stratified by ward type. Wards are classified as Medical, Surgical, or Mixed Medical/Surgical units based on case mix and undergo separate risk adjustment. We sought to identify reasons for the persistently elevated TAR-Adult-7 SAAR within a small Veterans Affairs teaching hospital.

Methods: SAARs >1 indicate increased antibiotic use after risk adjustment. Our mean (± SD) quarterly TAR-Adult-7 SAAR was persistently elevated in 2015 at 2.037 (0.302). The antimicrobial agents included in TAR Adult-7 are cefazolin, cefotetan, cefoxitin, intravenously administered cefuroxime, and cephalexin. Days of Therapy (DOT) per 1000 Patient Days were calculated for 2015 for each of the antibiotics within TAR Adult-7. Cefazolin was found to be the primary antibiotic used, and a chart audit of 20 randomly identified patients who were prescribed cefazolin in the hospital from October 2015 through December 2015 was conducted. Data collected through manual chart review included age, date of admission, date of discharge, admission diagnosis, admitting service, number of cefazolin doses received, use of post-surgery order set, procedure type, surgeon, and other reason for cefazolin of than surgical prophylaxis if applicable. Data was analyzed using descriptive statistics. Order menus specific to surgical antibiotic prophylaxis within the facility's electronic health record were also reviewed. Guideline recommendations for type and duration of antibiotic use for surgical site infection prophylaxis for the procedures performed were identified and compared with the findings of

the evaluation. Facility-wide antimicrobial stewardship interventions were explored to improve antimicrobial use.

Results: The mean (± SD) age of the patients reviewed was 68 (5.4) years. 85% (17/20) of patients were admitted to the surgery service while 18/20 (90%) of patients received cefazolin for surgical site infection prophylaxis. Only 10% (2/20) of patients were on cefazolin for treatment of an active infection. The mean (± SD) number of cefazolin doses administered to each patient for surgical site infection prophylaxis was 3.7 (0.7). NHSN defined mean (± SD) cefazolin DOT were 2.1 (0.2). 89% (16/18) of patients underwent orthopedic procedures including those related to hips, knees, shoulders, and spines, and ≤24 hours of antibiotic prophylaxis is recommended for these procedures. Many patients received up to 4 doses of cefazolin, 1 dose administered pre-operatively and 3 doses administered post-operatively. Order menu review identified post-operative quick orders for cefazolin administered every 8 hours for three doses were frequently being used. Order menus were updated to reflect ≤24 hours of cefazolin prophylaxis. The SAAR decreased by 13.2% from 1.982 in the first quarter of 2016 to 1.721 in the second quarter, which was consistent with our estimated DOT reduction of 15 DOT/month based on this intervention.

Conclusion: The facility's TAR-Adult-7 SAAR remained elevated despite chart-level review and excessive antibiotic use correction. Reviewing the facility's NHSN AU reporting plan, wards where cefazolin prophylaxis was administered were classified as Medicine wards. NHSN requires 40-60% medical/surgical patient case mix to be classified as Mixed Medical/Surgical units, while the wards evaluated had approximately 33% surgical patient case mix. Despite verifying appropriate surgical antibiotic prophylaxis use, risk adjustment procedures appear to penalize wards with higher proportions of surgical patients compared to similar wards with lower proportions within the defined ward classifications artificially elevating the TAR-Adult-7 SAAR—an issue for small facilities especially.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-274

Poster Title: Evaluating pharmacist interventions in a pilot pharmacist-managed chronic obstructive pulmonary disease clinic

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Additional Author (s):
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Purpose: The Global Initiative for Chronic Obstructive Lung Disease guidelines states that chronic obstructive pulmonary disease (COPD) is a complex disease that requires well-organized care and the input of multiple healthcare providers. Numerous pharmacist-managed clinics for various chronic diseases have been successful in improving patient care; however, there is a lack of published data reflecting the design and benefit of pharmacist-managed COPD clinics. The primary objective of this project is to evaluate the impact of pharmacist involvement in the treatment of patients with COPD by identifying the number and type of pharmacist interventions made in a pilot pharmacist-managed COPD clinic.

Methods: This retrospective chart review will include patients that have been enrolled in a pilot pharmacist-managed COPD clinic. Eligible patients are those who are 18 years or older with a diagnosis of COPD, currently prescribed one or more inhalers and able to attend face-to-face appointments. Exclusion criteria include patients that are oxygen dependent, have a diagnosis of congestive heart failure class III or IV, have had a recent lung infection in the past 3 months, or require chronic use of steroids for the treatment of COPD. Completed progress notes between October 1, 2016 and February 28, 2017 will be reviewed to assess the frequencies and percentages of the total number of interventions and the specific types of interventions made by a pharmacist. In addition, the mean, standard deviation, and range of values for the total number of interventions and the specific type of interventions will be examined. All findings will be provided in aggregate form. Individual patient data will not be presented. Types of interventions include the number of corrections in inhaler technique recommended by a pharmacist, recommendations made to primary care providers regarding COPD medications and/or immunizations, and referrals for pulmonary services and/or tobacco cessation.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-275

Poster Title: Effect of Implementing A Urinary Tract Infection Order-Set on Antibiotic Use

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Purpose: In July 2016 the Food and Drug Administration (FDA) Warning regarding fluoroquinolones recommended limiting their use in patients with uncomplicated urinary tract infections to reduce the potential for serious side effects associated with their use. Additionally, the most recent antibiogram at the Cincinnati VA Medical Center (CVAMC) shows a decrease in susceptibilities to fluoroquinolones against common urinary bacteria. The purpose of this quality assurance project is to ensure appropriate prescribing of antibiotics at the CVAMC to improve care provided to Veterans with uncomplicated urinary tract infections.

Methods: Prior to initiation, the project will be submitted to the University of Cincinnati Institutional Review Board for approval. The VA health system electronic medical record will be used to retrospectively identify patients with the ICD10 diagnosis code(s) of uncomplicated urinary tract infection from August 1, 2016-October 31, 2016. The following baseline characteristics will be collected: patient age and sex. The following additional data will be collected: antibiotic prescribed, urinary analysis, microbiology cultures , sensitivities, and any adverse events or allergies documented for antibiotics. Future objectives will be to compare the retrospective data obtained to the prospective data collected after the implementation of a Urinary Tract Infection Antibiotic Order Set. The pre versus post data analysis will help determine if the implementation of an order set decreased overall antibiotic use for uncomplicated UTI's at the CVAMC.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-276

Poster Title: Impact of Clinical Pharmacy Specialists (CPS) on Patient Aligned Care Teams (PACTs) on improving glycemic control in complex diabetic patients

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Tina Hamilton

Purpose: Diabetes is associated with a variety of vascular complications. Improved glycemic control may reduce incidence and progression of vascular complications. The objective of this study is to measure the impact CPS have on glycemic control in difficult to manage diabetic patients.

Methods: This study will be submitted to the University of Cincinnati Institutional Review Board and Cincinnati VAMC Research and Development Committee. The electronic medical record system will identify patients who had their first appointment with a CPS for diabetes management with a hemoglobin A1c (HbA1c) of at least 9% between January 1, 2006 to December 21, 2015. The following data will be collected: patient age, gender, race, sex, Care Assessment Needs (CAN) score; HbA1c levels at baseline and for up to 18 months after initial CPS encounter; medication refill history at baseline and up to 18 months after initial CPS exposure; type of encounter with CPS (face-to-face or phone); if patient takes metformin and/or insulin; and if patient met with a dietician or attended other patient education classes directed toward diabetes management. Patients that missed at least 3 CPS appointments over 18 month period, had less than 2 face-to-face appointments with a CPS, or were using insulin U-500 were excluded from the trial. All data will be recorded without patient identifiers and maintained confidentially. The following primary outcomes will be measured: difference in HbA1c from initiation of CPS-led diabetes to up to 18 months post-initial visit HbA1c (or sooner if appointments were discontinued due to achieving glycemic goal earlier than 18 months) and HbA1c post-CPS led interventions compared to the VA/DoD Diabetes Treatment Guideline HbA1c targets.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-277

Poster Title: Comparison of tolerability following initiation of neuropathic pharmacologic therapies at the Cincinnati Veterans Affairs Medical Center (VAMC)

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Purpose: Chronic non-cancer pain is one of the most common and costly medical conditions in the US, particularly within military veteran populations. While the Center for Disease Control recommends the use of non-opioid therapies for chronic pain where possible, adverse effects of each non-opioid therapy must be considered, especially those that lead to therapy discontinuation. The objective of this project is to determine whether duloxetine, gabapentin, and pregabalin vary in tolerability when used for pain in a veteran population, and whether the likelihood of tolerability varies with several patient-specific factors.

Methods: This project will be submitted to the University of Cincinnati Institutional Review Board and Cincinnati VAMC Research and Development Committee. The Cincinnati VA Medical Center's Computerized Patient Record System will be used to identify patients with new initiations of duloxetine, gabapentin, and pregabalin. Patients with a new initiation of a study medication for a pain-related indication will be retrospectively reviewed. Patients who choose to have the study medication dispensed from non-VA pharmacies will be excluded. Patient-related information collected will include patient date of birth, gender, renal function, hepatic function, relevant comorbidities, and concomitant interacting medications. Additional information related to the study medications will include dates of initiation, subsequent fills, and discontinuation (if applicable), starting and maximum doses prescribed, and reason for discontinuation. The primary outcome for this project will be the percentage of patients who discontinue the study medication due to intolerance. For the purposes of this project, intolerance will be defined as any documented adverse reaction that led to discontinuation of the study medication within six months of initiation. Secondary outcomes will include type of adverse effect leading to discontinuation, as well as rates of intolerability in correlation to drug-

drug interactions, comorbidities, decreased renal or hepatic function, age, and appropriateness of dosing. Chi-square tests will be used to compare rates of intolerance between groups.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-278

Poster Title: Evaluation of the incidence of hyperglycemia in patients who are on total parenteral nutrition (TPN) at the Cincinnati Veterans Affairs Medical Center (CVAMC)

Primary Author: Kristine Voon, Cincinnati Veterans Affairs Medical Center, OH; **Email:** voon.3@osu.edu

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Purpose: Studies have shown that patients who develop hyperglycemia while on total parenteral nutrition (TPN) are at a greater risk for negative outcomes, including mortality. The primary objective of this project is to identify the incidence of hyperglycemia in patients who are on TPN at the Cincinnati Veterans Affairs Medical Center. With this information, further research can be conducted to determine if empirically starting certain TPN patients on insulin would lead to better outcomes in the veteran population.

Methods: This quality improvement project will utilize the Veterans Affairs computerized patient record system (CPRS) to conduct a retrospective chart review. The following data will be collected: patient demographics (age, sex, weight, BMI), diabetes status (with most recent A1C if available), glucocorticoid use, ward setting, blood glucose (on admission, prior to TPN administration, during TPN administration), amount of dextrose, amino acid and lipids contained in TPN, if insulin was initiated, and number of days on TPN. All data will be collected and recorded without patient identifiers. Hyperglycemia will be identified as a blood glucose level greater than 180 mg/dL. Data will be collected and evaluated by one PGY1 pharmacy resident and two clinical pharmacy specialists. Results will be used to determine if there are certain patients who would benefit from starting insulin empirically with administration of TPN.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-279

Poster Title: Pharmacist monitoring of direct oral anticoagulants (DOACs): Evaluation of current timeline

Primary Author: Katherine Groh, Dayton VA Medical Center, OH; **Email:** katherine.groh2@va.gov

Additional Author (s):
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Purpose: Direct oral anticoagulants (DOACs) include rivaroxaban, apixaban, dabigatran, and edoxaban. Although they require less monitoring than warfarin, labs and patient adherence should be periodically assessed to reduce bleeding and thrombotic risks. Unlike warfarin, when missed doses occur with DOACs, the patient is not anticoagulated and is at risk. In addition, some DOACs have special storage and administration guidelines. Pharmacists can recommend a change in medication, make a dosage adjustment, or provide medication counseling in order to optimize efficacy and safety. The objective of this medication class evaluation is to assess the timeline of DOAC monitoring used at this institution.

Methods: The DOAC tracking sheet used by the pharmacists in the anticoagulation clinic (ACC) will identity patients that started on a DOAC agent between January 2015 and August 2015. The following data will then be collected from the patient chart: gender, age and weight upon initiation of therapy, date of initial anticoagulation consult, initial DOAC and dose, and indication. Follow-up appointments at 1 month, 3-4 months, 6-7 months, 9-10 months, and 12 months or greater will be assessed for number and type of pharmacist interventions. Interventions will be grouped based on relative severity and type of intervention. All data will be de-identified and maintained in a password protected document. Data analyzed will be used to identify: relative timeline needed for monitoring of DOACs by the ACC, time frame where pharmacists' interventions peaked, and need for continuous ACC monitoring of DOACs moving forward.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-280

Poster Title: Evaluation of vancomycin dosing protocol at the Dayton VA Medical Center

Primary Author: Shane Naylor, Dayton VA Medical Center, OH; **Email:** shane.naylor@va.gov

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Purpose: Vancomycin, a commonly used bactericidal antibiotic for methicillin-resistant Staphylococcus aureus, is pharmacist-dosed in many hospitals based on a pharmacokinetic protocol. Depending on the type of infection, target trough goals ranging from 10 to 15 or 15 to 20 mcg/mL are closely monitored to prevent resistance, treatment failure, and nephrotoxicity. This medication use evaluation (MUE) will assess the appropriateness of pharmacists' utilization of the current vancomycin protocol at the Dayton VA Medical Center.

Methods: A retrospective chart review was conducted to include patients who were prescribed intravenous vancomycin at the Dayton VA from May 1st 2016 through July 31st 2016. Exclusion criteria are: absence of trough level, patients on dialysis, amputees, and pre-operative use of vancomycin. Data collected will evaluate: appropriateness of initial calculated dose, percentage of patients whose first and second vancomycin trough levels were within therapeutic range, appropriateness of dosing frequency, renal function throughout treatment, and appropriateness of dose change if first trough was not in therapeutic range. All data will be de-identified and maintained confidentially. The vancomycin dosing protocol will also be compared to other hospitals' protocols to assess for major variances.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-281

Poster Title: Evaluation of pharmacist intervention in a post-discharge transitions-of-care clinic

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Additional Author (s):
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Purpose: Transitioning between care settings is overwhelming to patients, especially regarding medication changes, putting the patient at increased risk of medication-related problems (MRPs). Pharmacists are trained to identify medication-related problems; studies have shown that pharmacist involvement reduces adverse outcomes from MRPs. In fall 2015, Cleveland VA outpatient clinics began seeing recently discharged patients in a pharmacist-driven Post-Discharge Transitions-of-Care Clinic. No standardized process for this pharmacy service currently exists. The purpose of this project is to describe the current state of the Post-Discharge Transitions-of-Care Clinic, implement a standardized process to guide clinicians' consulting pharmacy, and to evaluate if standardization improves patient capture.

Methods: This quality improvement project will be conducted through utilization of the electronic medical record and survey results. The targeted patient population includes all patients seen by a pharmacist and/or a provider in the outpatient clinics for a follow-up appointment after discharge from an inpatient facility. An electronic chart review of patients seen by the pharmacist and/or provider will be completed, and a survey will be administered to nurses and providers to determine factors leading to pharmacist consultation. Following review, a checklist, process map, and note template will be developed and implemented in the Akron, Mansfield, and Parma community based outpatient clinics (CBOCs). After implementation, prospective chart review will be completed on patients seen for post-discharge follow-up by a pharmacist and/or a provider through early spring 2017. The primary objectives include determination and characterization of the decision process for clinicians' consulting pharmacy, implementation of a standardized process for consultation to pharmacy service, and to evaluate the feasibility and impact of long-term implementation of a

standardized process on clinicians utilizing the RE-AIM (Reach, Efficacy, Adopt, Implement, Maintenance) Framework. Secondary objectives will be to describe the clinic in terms of interventions, patient population seen, and clinician-patient interactions, as well as assessing re-admissions within 30 days of the visit. Data collected will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-282

Poster Title: Comparison of the use of aripiprazole and quetiapine for the adjunctive treatment of Major Depression (MDD)

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Additional Author (s):
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Colleen Hall
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Christopher Burant

Purpose: The purpose of this research project is to compare antidepressant augmentation with oral aripiprazole and quetiapine and their effects on inpatient psychiatric admissions and discontinuation rates. Our secondary objective will compare antidepressant augmentation with oral aripiprazole and quetiapine and their influence on reasons for discontinuation.

Methods: Patients will be identified for inclusion in the study through a pharmacy generated patient list including all patients with diagnosis of major depressive disorder and bipolar disorder based on ICD 9 and 10 codes who received prescriptions aripiprazole and quetiapine plus a selective serotonin reuptake inhibitor (SSRI) or serotonin norepinephrine reuptake inhibitor (SNRI) from January 1, 2007 to September 1, 2015. Patient charts will then be reviewed retrospectively to identify patients that meet inclusion criteria via electronic medical record. The target enrollment is 200 patients with a diagnosis of major depressive disorder or bipolar disorder who were initiated on oral aripiprazole or quetiapine as adjunctive agents to SSRIs or SNRIs. Patients with current diagnosis of delirium, dementia, amnestic or other cognitive disorders, schizophrenia, and patients on concomitant psychiatric medications (mood stabilizers, antipsychotics other than aripiprazole or quetiapine, antidepressants other than SSRIs and SNRIs, thyroid hormone used as augmentation, stimulants, mirtazapine >15mg, trazodone >300mg, and buspirone) will be excluded.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-283

Poster Title: Potential impact of a clinical pharmacist on treatment of urinary tract infections among older adults diagnosed at the emergency department

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Additional Author (s):
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Purpose: Urinary tract infections (UTIs) are one of the most common infections in patients over 65 years old. Despite the frequency, research has shown many instances where UTIs are over-diagnosed and over-treated. The over-diagnosis is well documented in long-term care, hospitalized, and community-dwelling older adults with new research now focusing on the emergency department. New data has shown the beneficial impact of pharmacy in the emergency department on overall optimization of antimicrobial stewardship. However, the potential impact of pharmacy on the management and follow up care in older adults diagnosed with a UTI in this environment is unknown.

Methods: This evaluation will be a retrospective cohort study of patients discharged from the emergency department with a primary or secondary diagnosis of urinary tract infection. The primary endpoint is the potential for pharmacy to intervene based on urinary culture results. This includes number of antibiotics that could have been discontinued based on negative cultures, number of mismatches between microbiological culture and patient-directed therapy, and number of antibiotics that could have been narrowed based on culture results. Secondary outcomes will evaluate presentation of symptoms in the older adult population based on Loeb criteria, specific use of antibiotics, number of unnecessary days of antibiotic therapy remaining with negative cultures, and incidence of negative urine cultures and negative urinalyses. Patients will be identified based on urinary cultures collected between January and September 2015. Patients will be included if they are >/=65 years old and were prescribed antibiotics on discharge. Exclusion criteria include admission to the hospital, presence of a chronic indwelling urinary catheter or temporary foley catheter, identification of polymicrobial urinary culture, co-

infection with bacteremia, or lack of a provider note describing the patient's diagnosis. Additional data collected will include patient demographics and co-morbidities, sensitivity and resistance patterns, and incidence of adverse drug events. All data will be presented using descriptive statistics. This study has been submitted to the hospital's Institutional Review Board (IRB) and is pending approval.

Results: In process

Conclusion: In process

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-284

Poster Title: Evaluation of the outcomes of the use of lurasidone for the treatment of bipolar depression

Primary Author: Melissa Rock, Louis Stokes Cleveland Veterans Affairs Medical Center, OH; **Email:** melissa.rock@va.gov

Additional Author (s):
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Purpose: Bipolar I disorder has a prevalence of approximately 1% of the population. While symptomatic, patients experience depressive symptoms threefold longer than manic symptoms and contribute significantly to health care costs. Quetiapine and lurasidone are atypical antipsychotics indicated for bipolar depression. Lurasidone was FDA approved for bipolar depression in 2013 and due to recent use at LSCDVAMC, it is unknown whether patients experience similar benefit as shown in previous clinical trials as compared to quetiapine. The purpose of this study is to assess time to medication discontinuation in patients prescribed lurasidone versus quetiapine for the treatment of bipolar depression.

Methods: A retrospective chart review will be conducted in patients prescribed lurasidone versus quetiapine for the treatment of ICD 9 and 10 diagnosis of bipolar depression from January 1, 2014 to January 1, 2016. Time to medication discontinuation will be assessed up to a one year period starting with the first lurasidone or quetiapine prescription up to January 1, 2017. Medication discontinuation will be defined as not receiving a subsequent prescription for lurasidone or quetiapine within thirty days of exhausting the medication day supply for the prior prescription. The reason for medication discontinuation and additional secondary outcomes with be determined by an electronic chart review. Secondary outcomes will assess the average length of medication treatment, the average dose of lurasidone and quetiapine prescribed, the use of adjunctive treatment by medication class for bipolar depression, the percentage and time to psychiatric hospitalizations, and the percentage of accurate medication directions of “take with food” for lurasidone.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-285

Poster Title: Impact of beta-lactam allergies on the treatment of methicillin-susceptible Staphylococcus aureus (MSSA) infections

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Purpose: Approximately 3 million U.S. patients have reported beta-lactam "allergies" with unknown to mild reactions. The identification of such reactions is essential when treating patients for MSSA infections, where β-lactams have shown superiority to vancomycin in MSSA bacteremia. The objective of this study is to determine the frequency at which a clinical history is elicited in β-lactam-allergic patients with MSSA infections. The primary endpoint is percent of a β-lactam allergy history as identified by documentation in patients' allergy tab and/or progress note upon initiation/discontinuation of MSSA therapy. Secondary endpoints include treatment failure, alternative therapy, hospital stay duration, and adverse drug event.

Methods: This is a retrospective chart review of patients from June 2006 to June 2016 with a beta-lactam allergy who received treatment for an MSSA infection. MSSA isolates will be identified via microbiological culture results from any bodily source with susceptibilities to oxacillin. The documentation of an allergy history will be identified from the allergy tab or progress note within the VA's Computerized Patient Record System (CRPS®) at the initial episode of MSSA infection. Documentation of an appropriate allergy history will be satisfied if information including, but not limited to, timing, type of allergic reaction, and subsequent exposure to beta-lactam antibiotics are present in the electronic medical record. Patients with penicillin and/or any beta-lactam listed in the patient allergy tab who were infected with confirmed MSSA isolates will be included, regardless of treatment setting. Two hundred patients that meet the aforementioned criteria will be included in this study, as long as antibiotics were not administered prior to drawn cultures. The authors hypothesize that less

than 50% of the included patients will have a documented history of the beta-lactam allergy. This study has been submitted to the Cleveland VAMC Institutional Review Board and is pending approval.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-286

Poster Title: Impact of Achieving Virologic Response from Hepatitis C Direct-Acting Antivirals on Diabetes Control

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Kristina Pascuzzi
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Purpose: New direct acting antivirals (DAAs) have changed the management of hepatitis C (HCV) infection. Manifestations of successful HCV treatment beyond the liver have yet to be explored. This study will expand on a previous study completed at the Louis Stokes Veterans Affairs Medical Center which found that 27% of Veterans with type 2 diabetes successfully treated with DAAs had de-escalation of their diabetes medications. Additionally, a statistically significant decrease in A1C of 0.63% was found. This current study will assess initial and sustained A1C change in patients who have had successful treatment with short course DAAs.

Methods: This study was submitted to the local Institutional Review Board for approval. Medication dispense history will be utilized to identify patients prescribed sofosbuvir, simeprevir, ledipasvir/sofosbuvir, ombitasvir/paritaprevir/ritonavir +/- dasabuvir, elbasvir/grazoprevir, and sofosbuvir/velpatasvir between February 1, 2014 and September 27, 2016 who also have a diagnosis of diabetes per ICD9 and ICD10 codes. Patients will be excluded if they did not complete full hepatitis C treatment or are not taking any diabetic medications prior to the start of hepatitis C treatment. The primary endpoint is the change in A1C from baseline to 4 months post HCV treatment. Secondary endpoints include sustained change in A1C up to 18 months post treatment and changes in diabetes medications at end of treatment, defined as escalation, de-escalation, and no change. Additionally, the changes in A1C and diabetes medications will be compared among those who achieve a cure defined as sustained viriologic response 12 weeks post-treatment (SVR12) and those who relapse. A paired t-test will

be used to analyze changes in A1C, while descriptive statistics will be used for other secondary endpoints. The anticipated sample size after inclusion and exclusion will be 160.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-287

Poster Title: Effectiveness of a pharmacist-directed Tdap immunization program for a university campus

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Purpose: Despite a slight increase in Tdap immunization rates, vaccination rates as cited by the CDC still fall short among adolescents and adults. In light of the current shortage of primary care physicians, pharmacists have the unique opportunity to help increase these rates, as they are the most readily accessible health care professionals. Pharmacists in underserved rural communities can help to improve immunization rates in concert with local health departments. The purpose of this study is to determine the effectiveness of a pharmacist-directed immunization program on a university campus in an ambulatory care clinic for employees and students.

Methods: This study is IRB approved and will be conducted as part of an employee wellness program. Employees, retirees, and students (18 years and older) will be screened to see if they meet the criteria for a Tdap vaccination. Patients who meet the CDC ACIP criteria for Tdap will be given an opportunity to schedule an appointment with a pharmacist. At the appointment, past medical history, current medications, demographics, and vaccine history will be collected. All candidates eligible and willing to take the vaccine will be immunized following an approved protocol. During the observation period, patients will be asked to complete a survey about the patient's understanding of the risk of pertussis and the role of the pharmacist. All subjects will be welcomed to attend a program that will discuss the difference between the Tdap vaccine and tetanus booster, the indications for the Tdap vaccine, and the safety of vaccinations. The primary outcome variable will be overall rates of Tdap vaccinations in the unvaccinated group. Secondary variables will include educational assessments and patient perceptions. Descriptive and inferential statistics will be used to analyze the data. Nonparametric testing will be used to

analyze Likert scale data from the surveys. All data will be protected by HIPAA standards. Screening tools, surveys, and assessments will become part of the medical chart. Data will be presented in aggregate form.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-288

Poster Title: Medication safety challenges encountered during electronic health record conversion

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Purpose: Implementing an electronic health record (EHR) system efficiently, in a health care facility, is important to provide effective patient care. However, even with the best preparation for installment of the EHR, many challenges still arise. Medication safety is always a priority in health care, especially upon installment of a new EHR system. The objective of this study is to evaluate the implementation of a new EHR system focusing on the medication safety challenges that arise during the implementation process.

Methods: A retrospective chart review will be completed to analyze medication processes and documentation parameters in both the inpatient/ambulatory and outpatient settings. The project will be submitted for review to the appropriate health system boards prior to implementation. The main outcome measure for the inpatient/ambulatory setting will assess the incidence of medication/administration documentation reflecting incorrect dose and/or route. The main outcome measure for the outpatient setting will assess the number of discrepancies noted between the medication profiles of the EHR and the outpatient pharmacy software package. Potential interventions for process improvement include developing a standardized medication reconciliation process, education for health care staff, and restriction of modifiable fields in medication administration documentation. Interventions will be approved and implemented by appropriate health system entities following baseline data analysis and presentation. Baseline documentation will be analyzed for fourth quarter fiscal year 2016. Documentation reassessment will be performed, for a comparable time frame, following implementation of approved interventions.

Results: In progress

Conclusion: In progress

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-289

Poster Title: Implementation of a pharmacy-driven metabolic validation testing in a Native American population

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Additional Author (s):
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Purpose: The use of metabolic validation with genetic testing is the first step towards personalized healthcare. The objective of this study is to determine how metabolic validation in a Native American population at the Chickasaw Nation Medical Center can help improve patient care by tailoring drug therapy to the patient which may help to decrease adverse events, improve targeted therapies and dosing, and help choose a more efficient, cost-effective medication.

Methods: The electronic medical record system will be used to identify patients who qualify for laboratory testing criteria for metabolic validation testing with one or more of 3 panels including neurology, cardiology, or thrombophilia. Patients will be screened by a qualified pharmacist while inputting new orders, counseling patients, or during appointment with pharmacy led clinics. Once screened, patients are educated about the metabolic validation test when they pick up their medication, or at their appointments in the clinic. A pharmacist performs a swab for the metabolic test if consent is given. The test is sent for analysis. A note template was approved and established with the clinical application coordinator team at the Chickasaw Nation Medical Center in the electronic health record. Imperative results are sent to the provider immediately and all results are scanned into the electronic health record note template for the health care team to review.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-290

Poster Title: Pharmacist influence on transitions of care in a rural medical-surgical population

Primary Author: April Belanger, Choctaw Nation Health Care Center, OK; **Email:** ambelanger@cnhsa.com

Additional Author (s):
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Purpose: Pharmacists play an integral role in helping prevent drug therapy problems in both the inpatient and outpatient setting. Where medication reconciliation and drug information are known areas of pharmacist expertise, not much is known about how pharmacists can aid in successful and complete transitioning of care for patients between an inpatient and outpatient setting. The objective of this study is to evaluate the effect of pharmacist-driven follow-up with patients transitioning from the inpatient to the outpatient setting.

Methods: This study will be submitted to the Choctaw Nation Institutional Review Board for approval. Eighty medical-surgical patients will be recruited over a period of nine months from the current census at the Choctaw Nation Hospital in Talihina, Oklahoma. In the Transitions of Care (TOC) group, patients with two or more chronic disease states meeting inclusion criteria will have a medication reconciliation completed by a clinical pharmacist on admission and medication counseling upon discharge using a standardized form. Following discharge, a pharmacist will contact the TOC group via phone within 72 hours and at days 7, 14, 30, 90, and 180 to discuss any medication therapy issues and to reiterate any deficits in knowledge. Phone calls will consist of a short, standardized questionnaire with any follow-up counseling deemed appropriate by the pharmacist conducting the telephone session at that time. TOC patients will also receive a short survey regarding their confidence in their knowledge of their disease state and medication therapy within 72 hours of discharge and at 30, 90, and 180 days post-admission. Additionally, patient surveys will assess patient satisfaction with the TOC service. For control groups, patients will be counseled on medications at discharge and receive follow-up using current methods employed at the Choctaw Nation Talihina Hospital. Patients in the control group will also receive follow-up calls at 30, 90, and 180 days post discharge.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-291

Poster Title: Evaluation of pharmacist-led hypertension management on adherence and clinical measures

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Purpose: Hypertension is one of the most common chronic conditions seen in primary care. Hypertension can lead to myocardial infarction, stroke, and renal failure if not detected early and managed effectively. Studies have shown that pharmacist-led clinics have had a positive impact on clinical outcomes in chronic disease management. The purpose of this study is to evaluate the impact of pharmacist-led hypertension management on medication adherence and guideline recommended treatment goals.

Methods: Patients who are seen in adult medicine clinic for hypertension management will be randomly selected to continue current management within adult medicine clinic, or receive additional follow-up in the pharmacist-led hypertension clinic. Patients will be monitored for medication adherence and clinical outcomes. Statistical analysis will be used to determine the overall impact of pharmacist-led hypertension management by comparing the difference in patients' clinical outcomes from baseline to follow-up. This study hopes to illustrate the value of pharmacist-led hypertension management through medication adherence and positive clinical outcomes. It is believed that there will be a significant difference in clinical outcomes from baseline to follow-up in patients managed in adult medicine clinic versus patients who received additional follow-up in the pharmacist-led hypertension clinic.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-292

Poster Title: Impact of a pharmacist-managed diabetes clinic on patients with poorly controlled diabetes

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Additional Author (s):
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Purpose: Type 2 diabetes poses a significant threat to the health of the United States, affecting approximately 29.1 million Americans. Complications of diabetes occur at higher rates with increasing glycemia and can include blindness, amputation, and end-stage renal disease. Many patients in the United States have poorly controlled diabetes. Clinical pharmacists are well-trained and well-positioned to address barriers in achieving glycemic control. The purpose of this study is to determine the effectiveness of pharmacists in the management of patients with poorly controlled diabetes and to determine the patient-satisfaction of an outpatient pharmacist-managed diabetes service.

Methods: This study will include retrospective evaluation of improvement in glycemic control and a patient satisfaction survey of the pharmacist-managed diabetes service. It will be submitted for approval by the University of Oklahoma Health Sciences Center Investigational Review Board. Patients will be identified from the diabetes pharmacotherapy service within the Oklahoma City Veterans Affairs Health Care System (OK VAHCS). To be included in the study, patients must have a hemoglobin A1c (A1c) value of 9.0 percent or greater in the six months prior to their first clinic appointment, as well as an A1c value taken after at least one clinic appointment and within the three to six months following clinic enrollment. Patients with a diagnosis of type I diabetes mellitus will be excluded. Patient encounters between July 1st, 2015 and December 31st, 2016 will be retrospectively reviewed. Absolute change in A1c and achievement of an A1c less than 9.0 percent and less than 7.0 percent will be measured to determine the improvement in A1c following enrollment in a pharmacist-managed diabetes pharmacotherapy clinic. Data will also be collected to evaluate predictors of successful A1c

lowering as a secondary endpoint. Baseline demographics will be collected. In addition, patients enrolled in the diabetes service will be offered the opportunity to participate in a telephone-conducted patient satisfaction survey.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-293

Poster Title: Impact of a change in service on sustained virological response rates in Veterans receiving ledipasvir/sofosbuvir for management of hepatitis C

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Purpose: The Veterans Health Administration has proposed initiatives to increase the number of hepatitis C virus-infected Veterans who are treated in order to limit disease progression and improve clinical outcomes. System redesign and increasing the workforce capacity are two initiatives that have been implemented at the study site. Pharmacists facilitate the transition of care of uncomplicated cases from Gastroenterology to Primary Care. This study aims to determine if the system changes at the study site have any impact on rates of sustained virological response, medication adherence, and treatment follow-up of Veterans treated for uncomplicated cases of hepatitis C infection with ledipasvir/sofosbuvir.

Methods: The study will be an institutional review board-approved, retrospective, descriptive chart review. Adult Veterans aged 21 years and older with hepatitis C virus infection who received a prescription for ledipasvir/sofosbuvir between January 2015 through October 2016 from either Gastroenterology or Primary Care providers will be included in the study. Veterans will be excluded if they have biochemical signs of cirrhosis and/or received ribavirin-containing hepatitis C virus regimens. An electronic data extraction form will be used to identify eligible participants and log pertinent data from study participants' electronic medical records. Data to be collected includes Veteran demographics, past medical history, social history, labs, imaging, medication history, and hepatitis treatment and follow-up course per provider documentation. The primary out come of the study will be sustained virological response achieved between the two groups, and secondary outcomes include compliance to medication treatment and monitoring follow-up. The Chi squared test will be used to determine statistical difference of the primary outcome. All continuous demographic and descriptive independent variables will

be analyzed by using their calculated means and standard deviations to compare data from each group using a t-test. The categorical variables of each group will be compared with the Chi-squared test after calculating frequencies and percentages. All statistical tests will be conducted with a priori alpha level of 0.05 utilizing statistical software.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-294

Poster Title: Evaluation of clinical outcomes of a pharmacist-based asthma clinic

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Purpose: According to the CDC, asthma affects 25.7 million people in the United States. In 2010, about 1.8 million people visited an emergency department (ED) and 439,000 people were hospitalized due to asthma. Despite many advances in treatment, asthma continues to be poorly managed and there is a significant need for optimized care plans. Over the past decade, pharmacists have expanded their roles in providing direct care and education to patients in ambulatory care settings. The purpose of this study is to evaluate the benefit of a pharmacist-based asthma clinic on improving asthma control and reducing asthma-related ED visits.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will evaluate the clinical outcomes of the pharmacy asthma clinic prospectively. Patients with poorly controlled asthma defined by National Heart, Lung, and Blood Institute (NHLBI) guideline will be referred to the asthma clinic. After confirming diagnosis with a respiratory therapist and a provider, patients will be accepted to the clinic per protocol. Inclusion criteria of this study will be patients 18 years of age or older, patients who filled short-acting beta2 agonist (SABA) medications more than two times per year, and patients who had one or more ED visits primarily due to asthma related events. Patients may be referred to the clinic by a provider or may be selected based on a chart review. Exclusion criteria will be patients with chronic oral steroid use, patients who are not diagnosed with asthma, and patients who are not able to fulfill the minimum requirement of three clinic visits. The study will measure clinical outcomes using tools suggested in the guideline such as improvement of asthma symptoms and quality of life, pulmonary function test (PFT), peak flow meter values, and reduced number of ED visits primarily due to asthma-related event. Patients who experience exacerbations during enrollment or whose symptoms are getting worse will be referred to the provider for further evaluation.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Descriptive Report

Session-Board Number: 1-295

Poster Title: Capturing inpatient pharmacy workflow to determine relevant productivity metrics

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Additional Author (s):
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Purpose: The landscape of clinical pharmacy practice in the inpatient hospital setting is rapidly changing. Within the Veterans Affairs Health Care System, there is a national movement to widen the scope of practice for pharmacists in order to increase Veteran access to care. To better assess the needs of the patient population and greater institution, this project is designed to map the currently daily activities of inpatient clinical pharmacists. By capturing workflow throughout the day, department leaders can define appropriate metrics to benchmark efficiency and performance. Furthermore, managers can utilize this information to expand pharmacy services.

Methods: In order to capture this information, data will be gathered from established reports as well as manually collected by inpatient pharmacists. The ten medical and surgical team pharmacists, two central pharmacists, and eight specialists will log their activities by type for a two week period during the hours of 7:00AM and 5PM. Inpatient pharmacists will be asked to take note of the number of chart reviews they perform as well as the number of phone calls or instant message received each day. This will further be broken down by who they are communicating with – attending physicians, resident physicians, nursing staff, social work, pharmacy staff, or other members of the health care team. Participating pharmacists will be asked to record the time spent on face-to-face education as well as the audience – attending physicians, medical residents, nurses, pharmacy residents, and pharmacy students. The amount of time spent on multidisciplinary rounds and administrative work will also be manually recorded. Authors will pull data such as the number of verified orders, discontinued orders,

encounters, and interventions captured by the Pharmacists Achieve Results with Medications Documentation (PhARMD) tool from pre-existing reports.

Results: NA

Conclusion: NA

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-296

Poster Title: Evaluating efficacy, safety, and cost effectiveness of liraglutide use in type 2 diabetes mellitus patients receiving VA care

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Additional Author (s):
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Purpose: Approximately one in four Veterans receiving VA care have type 2 diabetes mellitus (T2DM). The most common injectable medications used are injectable insulin. However, use of liraglutide, a glucagon-like peptide 1 receptor agonist (GLP-1RA), has been increasing at the VA Portland Health Care System (VAPORHCS). Many studies suggest a significant reduction in hemoglobin A1c (HbA1c) and body weight in comparison to other anti-hyperglycemic medications. Liraglutide efficacy, side effects and cost effectiveness have not been determined in the VA diabetic patient population. The objectives of this retrospective chart review are to evaluate these parameters.

Methods: This project is a retrospective chart review of VAPORHCS patients diagnosed with T2DM who have been or are being treated with liraglutide, liraglutide with basal insulin, or liraglutide with basal and bolus insulin between January 1, 2013 and February 28, 2016. Use of oral anti-hyperglycemic medication(s) will also be recorded. The purpose of the chart review is to evaluate change in HbA1c and weight, safety as recorded as reports of hypoglycemia and nausea, adherence by analyzing refill history, and cost of the medication. Data gathered from the chart review will be noted at baseline, six months, and 12 months.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-297

Poster Title: Evaluation of Acute Alcohol Withdrawal Treatment in Veterans at VAPORHCS

Primary Author: Christopher Wilming, VA Portland Health Care System, OR; **Email:** christopher.wilming@va.gov

Additional Author (s):
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Purpose: Benzodiazepines remain the standard of care for managing symptoms of acute alcohol withdrawal in hospitalized patients but their side effect profile can be a significant limitation throughout care. In recent studies, gabapentin has been shown to demonstrate utility in symptom management for alcohol withdrawal when compared to benzodiazepine treatment. Clinicians at VA Portland Health Care System (VAPORHCS) have been using gabapentin in some Veterans admitted as an adjunct to treatment for withdrawal since 2014. The purpose of this project will be to assess use of gabapentin for treatment of acute alcohol withdrawal at the VAPORHCS.

Methods: This project will evaluate the use of benzodiazepines and gabapentin for acute alcohol withdrawal symptoms in an inpatient setting. Patients receiving gabapentin and benzodiazepines will be compared to patients treated only with benzodiazepines. The primary endpoint will assess the total amount of benzodiazepines administered in both groups from the time of admission to the time of discontinuation of the alcohol withdrawal protocol. Secondary endpoints will measure time to Clinical Institute Withdrawal Assessment of Alcohol, revised (CIWA-Ar) score resolution and the incidence and duration of symptoms of delirium. This project will be submitted to the Research Office for approval as a Quality Improvement/Quality Assurance project. A retrospective chart review will be performed for patients admitted to VAPORHCS with a primary or secondary diagnosis of alcohol withdrawal from January 2014 to December 2015. Individuals with a Major Axis I psychiatric disorder, or with an active outpatient prescription for gabapentin or benzodiazepine will be excluded from this evaluation. CPRS will be used to collect data on patient demographics, past medical history, medication history, vital signs, Richmond Agitation Sedation Scale (RASS) scores, CIWA-Ar scores, pertinent

laboratory values, and any documentation regarding progression of symptoms. Data collected will be evaluated to determine the total amount of benzodiazepines administered, rate of CIWA-Ar score resolution, and signs and symptoms of delirium until discontinuation of the alcohol withdrawal protocol.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-298

Poster Title: Evaluation of Patients Receiving Second-Line Antibiotics for Pneumonia Due To Penicillin Allergy and Assessment of the Potential Impact of Utilizing Penicillin Allergy Skin Testing

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Additional Author (s):
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Purpose: Patients are prescribed second-line antibiotic therapy as a result of unclear chart-documentation or patient self-reported allergies instead of indicated first-line penicillin-based antibiotics. Penicillin allergy skin testing has been shown to be effective in clarifying unclear chart-documented penicillin allergies and may assist in providing better antimicrobial stewardship and utilization of more cost-effective, first line therapies. The objectives of this review are to assess the number of patients on second-line broad-spectrum antibiotics for pneumonia due to a documented penicillin allergy and determine potential antibiotic cost-savings of implementing penicillin allergy testing to provide first-line antibiotics.

Methods: This study was submitted to the Veteran Affairs Portland Healthcare System Research/Development department for approval. Data will be collected on patients admitted with pneumonia from October 1st, 2015 to March 31st, 2016. The data collected will be used to determine the number of patients that were a candidate for penicillin-based antibiotic therapy during that time period, but received different antibiotics due to documented penicillin hypersensitivity. Data will be retrieved from electronic medical record systems and entered in a password-protected Microsoft Excel spreadsheet database. All data will be stored securely to maintain patient confidentiality. Patient charts selected by the inclusion criteria will be reviewed for patient demographics, pertinent laboratory values, type of reaction documented for penicillin allergy, antibiotic received, prior administration history of penicillin, beta-lactam, cephalosporin, or carbapenem antibiotics. Percentage of Veterans who received second-line antibiotics, when a penicillin-based antibiotic was indicated, will be calculated and analyzed by descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 1-299

Poster Title: Pregnancy screening and prevention in female Veterans of child-bearing potential receiving potentially teratogenic mood stabilizer medications

Primary Author: Cassandra Abeyta, VA Portland Health Care System, OR; **Email:** cassandra.abeyta@va.gov

Additional Author (s):
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Purpose: The aim of this retrospective quality assurance project is two-fold. First, this review seeks to evaluate whether female Veterans of child-bearing potential who have been prescribed Pregnancy Category C, D, or X mood-stabilizing medications were screened for pregnancy and contraception use both upon initiation of the medication, as well as with each follow-up visit. Second, this review will assess whether Veterans were counseled on medication-specific risks and benefits prior to initiation. The results may help identify possible strategies for improvement in pregnancy screening and prevention in the setting of potentially teratogenic medications, and thus further optimize patient care and safety.

Methods: This project will examine the frequency of both pregnancy and contraceptive screening at this facility, as well as contraceptive counseling prior to initiation of a potentially teratogenic therapy. The primary endpoint will be the number of patients who received a Category C, D, or X mood-stabilizing medication and did not have pregnancy and contraceptive screening before initiation and with each subsequent follow-up appointment. The secondary endpoint evaluated for this project will be whether counseling regarding contraceptive use and potential risks of the Category C, D, or X teratogen was documented at the time of prescribing. This will be a single-center retrospective chart review. Females between the ages of 18-52 who received one of the medications in question (divalproex, lamotrigine, lithium, topiramate, or valproic acid) will be identified through prescription data search for the time frame of July 1, 2015 to June 30, 2016. Prescription data will also be used to assess whether or not the Veteran was receiving an oral, vaginal, patch, or injectable contraceptive medication at the same time. Chart review will be done on those Veterans identified to assess for pregnancy screening,

identify if other forms of contraceptive (i.e. IUD, implant) are used, and rule out any women with hysterectomy, tubal ligation, or documented infertility.

Results: None to date

Conclusion: None to date

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-300

Poster Title: Evaluation of cost-savings and sustained virologic response rates between Hepatitis C treatment regimens at VAPORHCS

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Long Do
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Purpose: New oral therapies that directly target HCV have proved to be more effective and have fewer side effects. However, these drugs are very costly. In February 2016, a new VA contract was negotiated which led to a significant price reduction of sofosbuvir/ledipasvir compared to sofosbuvir alone. As a result, treatment for genotype 2 patients at Portland VA Health Care System (VAPORHCS) was changed from sofosbuvir + ribavirin to sofosbuvir/ledipasvir + ribavirin. The aim of this project is to evaluate the cost-savings, sustained virologic response at week 12 (SVR12) and tolerability of sofosbuvir/ledipasvir + ribavirin versus sofosbuvir + ribavirin.

Methods: Records to be reviewed will be obtained from VAPORHCS electronic medical record systems. A search of all patients who received combination sofosbuvir/ledipasvir + ribavirin and sofosbuvir + ribavirin from January 2015 through August 2016 will be conducted in order to identify charts to be reviewed. The investigators will be responsible for identifying and reviewing all records in order to screen for study eligibility. Data to be collected for patients that meet the inclusion criteria includes: age, presence or absence of cirrhosis, prior HCV treatment, SVR12 data, and documented side effects from treatment received. Confidentiality risk will be minimized by de-identifying patient information with a separate file with the key. The SVR12 data of patients who received sofosbuvir + ribavirin will be compared to SVR data from patients that received sofosbuvir/ledipasvir + ribavirin. The main outcome measure will be cost-savings associated with new treatment protocol of HCV genotype 2 patients. The cost savings data will be based on the VA negotiated contract. Secondary outcomes will be any

difference in SVR12 between the two groups, and any documented side effects that may have led to discontinuation of treatment.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-301

Poster Title: Impact of decentralization of anticoagulation in an outpatient VA setting

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Purpose: The Veteran Affairs Roseburg Healthcare System (VARHS) has historically used a centralized model for anticoagulation management, where one clinical pharmacy specialist (CPS) manages all patients receiving anticoagulation therapy. Within the last three years, the VARHS has transitioned to a decentralized model, where CPS manage patients on anticoagulation within their assigned patient aligned care team (PACT). The purpose of this study is to compare the efficacy and safety of decentralized versus centralized management of anticoagulation in an outpatient Veteran population.

Methods: Data will be collected using the VA National Data Extract, and the Anticoagulation Management Tool (AMT) built into the Computerized Patient Record System (CPRS). The data will be extracted from patients receiving anticoagulation therapy with warfarin through the Eugene VA Clinic, a community based outpatient clinic (CBOC) that is part of the VARHS. Patients receiving anticoagulation therapy with direct oral anticoagulants (DOAC) will be excluded. Previously the Eugene VA Clinic operated a centralized anticoagulation clinic and transitioned to decentralized management of anticoagulation in January 2016. Retrospective data will be collected from February 2015 to September 2015 and February 2016 to September 2016. In order to determine the clinical effects of centralized versus decentralized anticoagulation management, the efficacy and safety endpoints that will be investigated include: time in therapeutic range (TTR) and adverse events. Secondary endpoints examined will include CPS workload, and patients lost to follow up which is defined patients with no INR value within 42 days.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-302

Poster Title: Antibiotic Stewardship Impact on Prescribing Practices and Patient Outcomes at Warm Springs Health and Wellness Center

Primary Author: Andrew Portier, Warm Springs Health and Wellness Center, OR; **Email:** andrewportier08@gmail.com

Additional Author (s):
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Purpose: Antibiotic resistance is a serious public health concern and continues to grow with inappropriate antibiotic prescribing. As a result, there is immediate demand for proactive public health strategies that will reduce health care costs and limit development of further bacterial resistance. Warm Springs Health and Wellness Center has implemented the use of guideline directed antibiotic order sets to promote consistent and appropriate prescribing practices. The purpose of this study is to better understand the impact of these order sets as an antibiotic stewardship intervention. If effective, this simple intervention could be a valuable model for other ambulatory care clinics.

Methods: An observational chart review will be conducted to measure the effect that guideline directed antibiotic order sets have on prescribing practices and patient outcomes. The antibiotic order sets used in this study will include guidelines for sinusitis, otitis media, community acquired pneumonia, and bronchitis. The impact of the order sets will be measured by the percentage of appropriate antibiotic prescriptions before and after order sets were implemented. Further analysis will look at clinical failure, patient compliance and providers' opinion of the order sets. Clinical failure will be defined as any of the following three outcomes: treatment failure, recurrent infection, or change in therapy because of an adverse drug event. Chart reviews will also provide some compliance data by measuring the number of patients picking up watchful waiting prescriptions and refills extending antibiotic therapy. Provider surveys will be yes/no, true/false or multiple choice questions used to assess the providers' order set usage and how much the providers value these resources. Data from the surveys will remain anonymous to encourage honest responses. Once all data is collected, the primary endpoint will be compared to the supplemental endpoints to find an association of interventions and improved patient outcomes.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-303

Poster Title: Naltrexone long acting injectable utilization and impact on alcohol detoxification hospitalizations

Primary Author: Christine Hancock, Corporal Michael J. Crescenz Department of Veterans Affairs Medical Center, PA; **Email:** christinemhancock@gmail.com

Additional Author (s):
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Purpose: Currently there are four FDA approved treatments for alcohol use disorder (AUD) disulfiram, acamprosate, naltrexone and long acting injectable (LAI) naltrexone. Compliance is a limitation of the three oral medications and it may be lessened by monthly injections. The study objectives are to evaluate utilization of naltrexone LAI on the inpatient psychiatry unit for AUD with regard to 1) continuation of therapy outpatient and 2) readmission to inpatient psychiatry unit with alcohol detoxification as a primary or secondary diagnosis within three months of initiating therapy versus readmission rates for AUD patients not receiving the LAI naltrexone.

Methods: This retrospective chart review has been determined to be a quality improvement study by the Institutional Review Board at the Corporal Michael Crescenz Veterans Affairs Medical Center. Eligible patients will be identified from a list of inpatient psychiatry unit alcohol related admissions with a primary or secondary diagnosis of AUD or detoxification and a list of naltrexone oral or LAI prescriptions limited to those on the inpatient psychiatry unit between the dates 07/01/2015 and 06/30/2016. The three months following the first injection or admission will be reviewed. Patients will be excluded if the indication for receiving naltrexone LAI is opioid use. The charts will be reviewed and the following information will be complied: demographics, date of first naltrexone injection, location and date of subsequent injections, number of naltrexone LAIs prescribed and administered and other pharmacologic treatments for AUD used by the patients. Data will be de-identified, securely recorded and analyzed to determine if the use of naltrexone LAI is decreasing alcohol related admissions in our patient population versus other treatments or no treatments. The clinic or unit where subsequent injections and the number of follow up injections will be assessed for naltrexone LAI to determine the rate of compliance over three month period.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-304

Poster Title: Evaluation of cost associated with management of angiotensin-converting enzyme inhibitor induced angioedema at a Veterans Affairs Medical Center

Primary Author: Himani Doshi, Corporal Michael J. Crescenz VA Medical Center, PA; **Email:** himani.doshi@va.gov

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Purpose: Angiotensin-converting enzyme (ACE) inhibitors are commonly prescribed within the Veterans Affairs Health Care System. ACE inhibitors are indicated for many disease states including, hypertension, diabetes, chronic kidney disease, heart failure, post-myocardial infarction, and coronary artery disease. Angioedema is a rare but serious side effect that is associated with this drug class. ACE inhibitor induced angioedema management can impact the overall cost to the health-care system. The purpose of this research project is to evaluate the cost associated with management of ACE inhibitor induced angioedema at the Corporal Michael J. Crescenz VA Medical Center (CMCVAMC).

Methods: This study has been submitted to the Institutional Review Board for approval. It is a retrospective chart review examining patients in both inpatient and outpatient settings at the CMCVAMC. We will identify relevant charts using the VA adverse drug event reporting system (VA ADERS). Patient charts used for analysis will be of adult (18 and over) male and female patients who had reported angioedema while on an ACE inhibitor for any indication. We will estimate the cost for procedures, consults, and physician services from Centers of Medicaid and Medicare Services allowable charges, internal procurement cost, and Healthcare Bluebook. Drug treatment costs will be estimated based on average wholesale price. We will evaluate trends from our data to encourage future cost effectiveness studies comparing ACE inhibitors to alternative therapies. We anticipate reviewing up to 400 total patient charts for data analysis.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-305

Poster Title: Quality improvement to limit fluoroquinolone use for urinary tract infections in the outpatient setting

Primary Author: Kimmy Nguyen, Corporal Michael J. Crescenz Veterans Affairs Medical Center , PA; **Email:** kimmy.thy.nguyen@gmail.com

Additional Author (s):
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Purpose: Fluoroquinolones are often used for the treatment of urinary tract infections (UTIs) since they achieve extensive urinary concentrations with historically high activity against common causative pathogens. However, the Infectious Diseases Society of America (IDSA) guidelines and the Corporal Michael J. Crescenz Veterans Affairs Medical Center (CMCVAMC) antibiogram report significant fluoroquinolone resistance. A recently updated black box warning to include potentially permanent and disabling adverse effects highlights the need for limited fluoroquinolone use as last line options. The study aims to determine the incidence of inappropriate fluoroquinolone use in the outpatient setting before and after guideline feedback and education.

Methods: This quality improvement project focuses on fluoroquinolone use in the treatment of UTI before and after an intervention. Phase one of the project is a retrospective chart review to examine the number of fluoroquinolone prescriptions issued by primary care providers in the outpatient setting at the CMCVAMC. Patients enrolled in specialty clinics or services, such as urology, renal clinic, and home-based primary care, will be excluded. Collected data will be analyzed for inappropriate use of fluoroquinolones based on current treatment guidelines. Phase two of the project will provide education and feedback to primary care providers. This intervention will be conducted through targeted emails and a live presentation. The proportion of inappropriate fluoroquinolone use will be compared before and after intervention. Subgroup analyses will include the following: empiric versus definitive therapy, and lower UTI only versus UTI with systemic illness. In those receiving definitive therapy, the urine culture results will also be reviewed. 95% confidence intervals will be used for all point estimates. The rate of fluoroquinolone use in UTI treatment per patient visits will be compared before and after

intervention. Additionally, the proportion of fluoroquinolone use in UTI will be compared to fluoroquinolone use as a whole. Data will be collected and analyzed from outpatient primary care clinics over the course of several months with an anticipated completion date by the end of April 2017.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-306

Poster Title: Appropriateness of broad spectrum antipseudomonal agents seventy-two hours after initiation

Primary Author: Ivan Puskovic, Corporal Michael J. Cresenz Veterans Affairs Medical Center, PA; **Email:** ivan.puskovic@va.gov

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Purpose: De-escalation of broad spectrum antibiotics in cases where they are no longer needed is a necessity in not only preventing the side effects associated with these agents, but helping stop the spread of antimicrobial resistance. The recently updated Joint Commission antimicrobial stewardship guideline published a list of core elements that an antimicrobial stewardship program must have, including the need for having a systemic evaluation of ongoing antibiotic therapy. This project aims to evaluate the appropriateness of antipseudomonal therapy after 72 hours of initial empiric treatment and to intervene with recommendations to providers when a change in therapy may be indicated.

Methods: This project was approved by the Institutional Review Board as a quality improvement project. Using Theradoc, an electronic clinical surveillance software that is incorporated into the hospital's electronic medical record, all acute care inpatients admitted to the Corporal Michael J. Cresenz Veterans Affairs Medical Center on broad-spectrum antipseudomonal therapy greater than 72 hours will be identified. All data collected will be stored within Theradoc. An initial assessment will be made to see if treatment continuation is appropriate, like in documented Pseudomonas aeruginosa infections. If treatment is not appropriate, or appropriateness is uncertain, contact will be made to the appropriate pharmacist on the floors to discuss de-escalation of therapy with the medical team. Follow-up on the medical team's decision to either continue treatment or to de-escalate treatment will then be made by said pharmacist to the investigator, who will document the intervention. Additional data to be collected includes: initial antipseudomonal agent and what it was de-escalated to, time it took to de-escalation, and percentage of cases where cultures were not obtained in the initial 72-hour treatment window.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-307

Poster Title: Implementation of diabetes education classes utilizing clinical video telehealth

Primary Author: Morgan Peterman, Lebanon VA Medical Center, PA; **Email:** morgan.peterman@va.gov

Additional Author (s):
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Purpose: Currently, diabetes education classes are only available at the medical center's main campus. Clinical pharmacy specialists and registered dieticians lead the three-class series consisting of diabetes basics, healthy eating, and risk reduction. Veterans receiving care through community-based outpatient clinics (CBOC) must commute to the main campus for the series.
The goal of this project is to increase Veterans' access to diabetes education classes through the use of real time, clinic-based video telehealth (CVT) technologies. By utilizing CVT, this series would be available to a greater number of Veterans with pre-diabetes or newly diagnosed type-2 diabetes mellitus (T2DM) within our facility.

Methods: This project was reviewed and approved in accordance with local policy and procedure for quality improvement projects. Currently, providers place a consult for diabetes education classes, which lists the main campus as the only location for group classes. Once the consult is placed, the Veteran is then scheduled for the series, three consecutive Monday afternoons in the designated month.
This project will designate a single CBOC to serve as the pilot program and utilize CVT technologies for class facilitation. The clinical pharmacy specialists will work with the nutrition department to combine efforts for live CVT classes from the main campus to the pilot CBOC. The diabetes educators will also collaborate with CVT coordinators at the designated pilot CBOC to define program structure. Clinic grids and schedules will need to be established to coincide with the main campus. Additionally, education on the consult and series will be given to ancillary staff, primary care providers, and CVT coordinators at the pilot CBOC prior to implementation.

The current consult will be updated to include the pilot CBOC as a second location option. If the pilot CBOC is selected on the consult, the Veteran will then be scheduled for the live group education classes via CVT. Following the pilot program period, strengths and weaknesses of the program will be assessed before consideration of expansion to additional CBOCs.

Results: In progress

Conclusion: In progress

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 1-308

Poster Title: Defining the role of the patient aligned care team (PACT) pharmacist

Primary Author: Kelcymarie Bye, Lebanon VA Medical Center, PA; **Email:** kbye@umaryland.edu

Additional Author (s):
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Purpose: Patient-centered medical homes (PCMHs) have become a foundation for primary care, involving a team of healthcare professionals working together with the patient as the focus. At the Department of Veterans Affairs (VA), primary care is structured as PCMHs that are known as Patient Aligned Care Teams (PACTs). These teams include pharmacists, but the concept of a pharmacist in primary care is relatively new. The objective of the project is to define the role of the PACT pharmacist at this facility.

Methods: This will be a quality improvement project. The plan will be to first assess the current responsibilities of the PACT pharmacist. Then, the structure of PACT pharmacy services, including communication methods, procedures for documentation, referral services, and appointment schedules, will also be reviewed. After defining the structure and responsibilities, a process to educate providers and patients on the role of the PACT pharmacist will be developed. This will provide a clear guideline to have consistency between the PACT pharmacists and to distinguish the roles of the PACT pharmacist from other clinical pharmacy specialists.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-309

Poster Title: Impact of a transitions of care pharmacist at discharge and follow-up after total hip or knee arthroplasty

Primary Author: Chelsea Reed, Lebanon VA Medical Center, PA; **Email:** chelsea.reed2@va.gov

Additional Author (s):
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Purpose: Pharmacists are well-suited to assist in transitions of care (TOC) processes among patients at a high risk of hospital readmission. Patients undergoing elective knee or hip arthroplasty are at risk of complications or readmission, and the Centers of Medicare & Medicaid Services (CMS) has added the 30-day all-cause readmission rate for this population to the quality measures that they monitor. The objective of this project is to assess the impact of pharmacist-led medication reconciliation and education at discharge after total hip or knee arthroplasty on 30-day all-cause readmission rate.

Methods: This project has been approved by the pharmacy excellence committee. Patients undergoing an elective total knee or hip arthroplasty will be identified prior to discharge and will receive the following TOC services: discharge medication reconciliation, medication counseling, and a printed copy of the discharge medication list. Patients will be excluded if they are discharged to a long term care or assisted living facility, transitioning to another service in the hospital, or discharged to a nursing home. Patients will be offered a follow-up telephone call within five days of discharge to address any questions or concerns. Additionally, if the patient receives care from a non-VA primary care physician, an offer will be made to forward the discharge medication list to that provider. Baseline demographics will be collected and the primary outcome will be to assess the impact of pharmacist TOC services on 30-day all-cause readmission rate. Data collected will be compared with baseline data from patients undergoing hip or knee replacement prior to implementation of the above TOC services. The findings from the project may be used as evidence of the benefits of having a pharmacist providing these services in the future.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-310

Poster Title: Implementation of a pharmacist managed electronic consult service for perioperative anticoagulation management

Primary Author: Christine Trusky, Lebanon VA Medical Center, PA; **Email:** christine.trusky@va.gov

Additional Author (s):
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Purpose: Currently no standardized practice exists for perioperative anticoagulation management at this VA Medical Center. The objective of this project is to develop a pharmacist managed electronic consult (e-consult) service in order to provide a centralized process for perioperative anticoagulation management.

Methods: Current perioperative anticoagulation management at this institution will be reviewed. The following data from the electronic medical record will be collected: duration of anticoagulant interruption, documentation of instructions provided to patient, documentation of enoxaparin counseling, procedural delays related to anticoagulation management, and appropriateness of enoxaparin dosing. Education will be provided to primary care physicians (PCPs) and surgeons regarding the current evidence and recommendations for perioperative anticoagulation management. Additionally, a pharmacist managed e-consult service will be implemented. This consult service will provide recommendations for patients requiring perioperative anticoagulant management in a standardized template.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-311

Poster Title: The impact of a clinical reminder in prescription patterns of Nonsteroidal Anti-inflammatory Drugs, in patients with oral anticoagulant therapy among VA Caribbean Healthcare System providers

Primary Author: Vanessa Estrada-Rodríguez, VA Caribbean Healthcare System, PR; **Email:** vanessa.estrada@upr.edu

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Purpose: Administration of NSAIDs and anticoagulants concomitantly can significantly increase the risk of a hemorrhagic event. Recent studies have proved that NSAIDs double bleeding risk with anticoagulants for DVT/PE, even when the treatment is just for a few days. Providers are used to prescribe these two medications concomitantly. Computerized Patient Record System (CPRS) clinical reminder will help the provider identify the risks of these interactions and as a result it will be expected to decrease concomitant administration of anticoagulants and NSAIDs. The purpose of this study is to know if this clinical reminder will have an impact in physicians prescription patterns.

Methods: We will be identifying patients with concomitant therapy of oral anticoagulants and NSAIDs in the time frame of October 2015 – August 2016 (Fiscal Year 16) thru a report. We will review the medical records of the identified patients for any signs or symptoms of bleeding during the concomitant use of the two drugs. After the assessment of incidence of bleeding we are going to implement a clinical reminder for providers prescribing NSAIDs about the risk of the interaction with a chronic treatment of oral anticoagulants. After 3 months post implementation we will identify patients with concomitant therapy of oral anticoagulants and NSAIDs again. And then with these results present the difference if any of the prescribing patterns after the implementation of the clinical reminder, comparing the rates of concomitant prescribing of NSAIDs and oral anticoagulants before and after the implementation of the reminder.

Results: In progress

Conclusion: In Progress

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-312

Poster Title: Use of sodium-glucose co-transporter 2 inhibitors in patients at VA Caribbean Healthcare System (VACHS)

Primary Author: Karla Jimenez-Rodriguez, VA Caribbean Healthcare System, PR; **Email:** kj532@nova.edu

Additional Author (s):
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Purpose: Recent studies have demonstrated the effectiveness of sodium-glucose co-transporter 2 inhibitors (SGLT-2) in patients with type 2 diabetes and cardiovascular disease. These are the newest class of oral anti-diabetic drugs on the market. Within the VA Healthcare System two of the three medications in this class are available: canaglifozin and empaglifozin. The rationale for performing this project as a Medication Use Evaluation is to determine the appropriateness and safety of the class of sodium-glucose co-transporter 2 inhibitors (SGLT-2) in the VA population selected.

Methods: This medication use evaluation of the SGLT-2 inhibitors class will include patients from the VA Caribbean Healthcare System. Also, patients with cardiovascular conditions who are currently on other medication than empaglifozin within the class of SGLT2 inhibitors will be switched to the VHA preferred therapy of empaglifozin. Inclusion criteria for this switch in therapy is as described in VA PBM Criteria for use of empaglifozin. Patients who do not have concomitant cardiovascular disease will be excluded from the group of patients that will be switched to empaglifozin. The project will be carried out by reviewing the medical charts of the patients. A time period will be selected from the date in which the patient started taking the medication until at least six months of therapy. Since VA has predetermined criteria for use for SGLT-2 inhibitors, each criterion will be evaluated to determine if patients meet each and every one of the required criteria. In terms of clinical outcomes, the following will be described in a retrospective manner by reviewing medical charts: Hemoglobin A1c, fasting glucose, blood pressure, weight, serum creatinine and estimated glomerular filtration rate. The appropriateness of this class of medication will be measured in terms criteria for use met in each patient. Safety analysis will be described according to the adverse effects of the class, tolerability and/or discontinuation of the medication.

Results: Pending

Conclusion: Pending

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-313

Poster Title: Pharmacist-led interdisciplinary initiative to decrease benzodiazepine use in geriatric population of VACHS

Primary Author: Krissia Funes, VA Caribbean Healthcare System, PR; **Email:** krissia.funes@va.gov

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Purpose: The Beers Criteria published in 2015 by the American Geriatrics Society strongly recommends benzodiazepines be avoided in the elderly for the treatment of insomnia, agitation, or delirium. Benzodiazepines increase the risk of cognitive impairment, delirium, falls, and fractures. The goal of this activity is to minimize the exposure of elderly patients to side effects and adverse events associated with use of benzodiazepines.

Methods: In 2013, the Psychotropic Drug Safety Initiative (PDSI) dashboard was launched nationwide, in each VHA facility to foster the highest quality of treatment. The goal of this Veterans Health Administration (VHA) initiative is to help improve psychotropic drug prescribing by identifying patients who may benefit from a more thorough clinical review of current treatment, such as benzodiazepine drug utilization review in geriatric populations. The PDSI dashboard will be used to identify patients that are 75 years of age or older who are taking benzodiazepines. Patients will be selected from the outpatient setting, specifically those followed by the Geriatric Patient Aligned Care Team (PACT) clinic. PACT clinics are organized into interdisciplinary teams with the goal to improve clinical continuity, coordination, and patient-centeredness. Patients taking benzodiazepines for seizure disorder or under hospice care will be excluded from the activity. Patient will be contacted by team pharmacists via telephone to discuss potential side effects and adverse events of benzodiazepine use and patient willingness for discontinuation. Primary care provider (PCP) will be informed of patient interest to discontinue use of benzodiazepine. PCP will determine if discontinuation is appropriate, in which case an electronic consult will be generated for psychiatry for guidance in benzodiazepine taper. Patients will be followed up by the pharmacist to ascertain appropriate discontinuation taper of the benzodiazepine.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 1-314

Poster Title: Use of Erythropoietin in Oncology Patients at VA Caribbean Healthcare System in San Juan, Puerto Rico (VACHS)

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Purpose: To describe the use of erythropoietin in the oncology patient population at VACHS. Current guidelines at the VA align with the ESA REMS program and state that the use of erythropoietin should be limited to those undergoing at least two planned rounds of palliative chemotherapy and who suffer anemia defined as a hemoglobin <=11mg/dL with symptoms or <=10mg/dL without symptoms. It is also recommended that the patient's hemoglobin be monitored every 4 weeks. The project will assess the appropriateness of oncology patients selected for erythropoietin, their monitoring, and, if applicable, the conditions under which therapy was discontinued.

Methods: Our study will be a retrospective chart review. Patients will be selected from the APPRISE REMS program enrollment forms as these are individuals who have received erythropoietin for purposes of supportive care of anemia in the oncology setting. Approximately 80 patients spanning from 2011 to present are available to collect the following information from the medical record: Initial dose of erythropoietin, frequency of administration, dosage adjustments, number of doses received, hemoglobin levels, serum ferritin, folate, TSH, vitamin B12, planned duration of chemotherapy, intent of chemotherapy (curative or palliative), date of discontinuation of erythropoietin, reason for discontinuation, and adverse drug reactions documented. All patient information will be maintained in a secure and locked area at all times. Our goal is to collect parameters that describe the current practice of erythropoietin use in the oncology population at this institution.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-315

Poster Title: Initiating direct oral anticoagulants through the use of clinical video teleconference software at the Providence VA Medical Center (PVAMC) – a new clinic startup.

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Additional Author (s):
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Purpose: Warfarin is one of the most widely used anticoagulants today; however its use is slowly falling out of favorability since the release of the Direct Oral Acting Anticoagulants (DOAC). DOACs require less monitoring, but still have a high bleeding risk. At the PVAMC, initiation of a DOAC requires an appointment with a Clinical Pharmacy Specialist to discuss risks, and assess adherence. For select patients, a major barrier to patient care may include lack of long distance transportation, subsequently disqualifying eligible candidates to be converted. This study aims to eliminate that disparity and allow patients to be seen, regardless of distance.

Methods: This study will be submitted to the Institutional Review Board for prior approval. A new clinic will be introduced utilizing clinical video teleconference, or CVT, that will connect to three community based outpatient clinics, or CBOCs. The Computerized Patient Record System (CPRS) will identify patients who currently are on warfarin, their location, and use of a CBOC as their primary location of care. Additionally, the Anticoagulation Sharepoint Dashboard will identify patients who have a time in therapeutic range, or TTR, less than 50%. Those who meet both criteria will be offered an appointment to be seen for conversion. At the end of the appointment, the patient will be given a survey of their experience and satisfaction with their CVT appointment. In addition to the patients being selected due to low TTR, consults will be available for provider entry on patients with new indications for anticoagulation and not eligible for warfarin therapy. The following data will be collected from all patients seen in clinic: patient age, height, weight, gender, ethnicity, current warfarin dosing, warfarin refill history, current TTR, LFTs, total bilirubin, serum creatinine, patient satisfaction, and provider satisfaction. Primary outcomes will look at compliance ratio prior to initiating a DOAC, number of patients

converted to a DOAC, indications prohibiting conversion, and patient satisfaction. Secondary outcomes will look at patient conversion from consults and provider satisfaction.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-316

Poster Title: Antipsychotic use as a risk factor for first episode venous thromboembolism (VTE): A case-control study

Primary Author: Amanda Eloma, Providence VA Medical Center, RI; **Email:** amanda_eloma@my.uri.edu

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Purpose: There have been numerous case reports of venous thromboembolism (VTE) in patients receiving antipsychotic (AP) treatment. Although some literature suggests a probable association, more studies are needed to determine the comparative risk. Clozapine remains the most extensively reported AP associated with VTE. Data comparing the VTE risk potential of various antipsychotics subtypes and prescribing patterns is sparse. Some suggest VTE risk is dependent on type, potency, and agent, however other parameters (i.e., dose, duration of treatment) were not addressed. Our objective is to evaluate if AP use may be associated with the development of first episode VTE.

Methods: This retrospective case-control study will compare Veterans' diagnosed with first episode VTE from August 1st, 2014 to July 31st, 2015 with matched controls (by age and sex). Frequency of active AP prescriptions at the time of VTE diagnosis will be determined for each group. We will review the use of AP and determine if there is a higher incidence of AP use in the VTE Case Group. Inclusion criterion includes patients greater than 18 years of age. Exclusion criteria includes malignancy, surgery/trauma in last 3 months, pregnancy, use of oral contraceptives, immobilization, history of VTE, atrial fibrillation, hormone replacement therapy, antiphospholipid syndrome, factor V Leiden deficiency, and prescribed any anticoagulants. The following data will be collected: demographics (age, sex, race, BMI), VTE ICD-9 /ICD-10 codes, antipsychotic parameters (name, dose, start date, date of most recent fill), and VTE risk factors such as smoking status.
The primary outcome is to determine AP risk of VTE. Secondary outcomes include analyzing which AP subtype, dosage, or usage pattern may place patients at higher risk of VTE. This study is pending Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-317

Poster Title: Effect of lifestyle modification services on glycosylated hemoglobin in new onset type 2 diabetes mellitus: a pilot study

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Purpose: The American Diabetes Association recommends lifestyle modifications, including diet and physical activity, as the cornerstone of diabetes management. The Providence Veterans Affairs Medical Center (PVAMC) offers services that target lifestyle changes to benefit glucose control, including nutrition, exercise programs, and diabetes education. However, a comprehensive diabetes service for patients with new onset type 2 diabetes mellitus (T2DM) is lacking. The objective of this study is to determine the change in glycosylated hemoglobin (HbA1c) in patients with new onset T2DM who are referred for, and enroll in, lifestyle modification services relative to patients who do not receive services.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective electronic chart review will be conducted to identify patients with at least two consecutive HbA1c values between 6.5 and 8.0 percent. Patients with type 1 diabetes mellitus and patients on insulin therapy during screening will be excluded from the study. Patients with HbA1c between 6.5 to 8.0 percent will be further classified into two groups based on if the patient was referred to, and enrolled in, lifestyle modification services at the PVAMC. Subsequent changes in HbA1c will be assessed at 6, 12, and 24 months. At each interval, the difference in HbA1c between groups will be compared to characterize the effect of lifestyle modification services on diabetes control. Other data that will be collected include: patient age, gender, ethnicity, baseline body mass index, and medication list. No patient identifiers will be collected to maintain patient confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-318

Poster Title: Impact of medication reviews and interventions conducted by pharmacy representatives on frequency of falls

Primary Author: Chelsea Sampadian, Providence Veterans Affairs Medical Center, RI; **Email:** chelsea.sampadian@gmail.com

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Purpose: Falls are associated with increased morbidity, mortality, and direct medical costs. While generally multifactorial in nature, most falls are preventable, with medications being a common modifiable risk factor. Pharmacists maintain a crucial role in identifying medications that increase fall risk and performing applicable interventions. The primary objective of this study is to determine the impact of medication reviews and interventions conducted by a pharmacy representative on the frequency of falls in a home based, primary care patient population.

Methods: This study has been submitted to the Institutional Review Board for approval. A retrospective electronic chart review will be executed for patients enrolled in home based primary care between September 1, 2010 to September 1, 2015, who experienced at least one documented fall that was subsequently evaluated by a pharmacy representative (clinical pharmacist, pharmacy resident, or pharmacy student) for medication-related risk factors. Medical records that do not include at least one subsequent medication review and intervention recommended by the pharmacy representative will be excluded from the study. The primary endpoint is the difference in frequency of falls between the accepted pharmacy intervention group compared to the rejected pharmacy intervention group. Secondary endpoints include the most prevalent medication classes intervened upon by the pharmacy representative, as well as by the prescriber, and medication classes most often associated with a reduction in fall frequency. Baseline characteristics include age, sex, race, weight, height, body mass index, co-morbidities, as well as baseline medications and specific baseline laboratory values. All data will be collected via a standardized data collection form and void of any patient identifiers to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-319

Poster Title: Evaluation of the association between chronic proton pump inhibitor use and dementia at the Providence Veterans Affairs Medical Center

Primary Author: Alissa Scalise, Providence Veterans Affairs Medical Center, RI; **Email:** alissa.scalise@gmail.com

Additional Author (s):
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Purpose: Proton pump inhibitors (PPIs) have been associated with an increased risk of incident dementia in recent studies. PPIs have been shown to decrease vitamin B12 levels with long term use which can be associated with decreased cognitive functioning. Additionally, PPIs were observed to enhance beta-amyloid levels in the brains of mice. The primary objective of this study is to determine if there is an association between chronic PPI use and incident dementia exists at the Providence Veterans Affairs Medical Center. A secondary objective will be completed to assess whether each patient had other known risk factors for cognitive decline.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective electronic chart review will be conducted. Patients ≥ 65 years old who have been prescribed a 90-day supply of a PPI (omeprazole, esomeprazole, lansoprazole, pantoprazole and/or rabeprazole) at least one time from September 2014 to September 2016 will be included. The following data will be collected: patient age, gender, medical conditions, and medication list. If available, vitamin B12 and vitamin D levels will be collected. All data will be recorded without patient identifiers and maintained confidentiality. Patients found to meet these criteria will be separated into two groups, patients with a dementia diagnosis and patients without a dementia diagnosis. These groups will then be reviewed and further separated into patients with chronic PPI use, and short-term PPI use. Chronic PPI use will be defined as at least 1 prescription for a PPI filled per quarter for at least 1 year during the study period. For patients with a current diagnosis of dementia, the reviewers will determine if a dementia diagnosis was made after the initiation of chronic PPI use. The percent of the chronic PPI users diagnosed with dementia after initiating PPI use will be calculated.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-320

Poster Title: Efficacy and Safety of Tacrolimus Three Times Daily Dosing in Pediatric Kidney Transplantation

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Additional Author (s):
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Purpose: The aim of this study is to compare the efficacy and safety of three times daily (TID) to twice a day (BID) dosing of tacrolimus in pediatric kidney transplant patients, at King Faisal Specialist Hospital and Research Centre (KFSH&RC), Riyadh, Saudi Arabia.

Methods: This is a retrospective, single center, comparative cohort study. All pediatric kidney transplant patients who aged less than or equal to 18 years were included. We excluded patients who received enzyme inhibitors and/or enzyme inducers in the first 14 days and who received tacrolimus BID dosing and reached therapeutic level with dose of less than 0.2 mg/kg/day. The primary endpoints were the percentage of patient who achieved therapeutic tacrolimus concentration at 5 days and median time to reach therapeutic tacrolimus concentration. The secondary endpoints were adverse events, patient and graft survival and biopsy proven acute rejection at 12 months. All patients who met the inclusion criteria were included. The study was approved by the Institutional Review Board (IRB).

Results: A total of 86 patients were included in the study; 47 patients received tacrolimus BID and 39 patients received tacrolimus TID. The percentage of patients who achieved therapeutic levels with tacrolimus TID, did not significantly differ from those who received BID regimen at day 5 (48.7% TID vs. 61.7% BID; P=0.227). The median time to reach therapeutic level was three days for both groups. Adverse events were similar between the groups, however, elevated serum creatinine (57.44% vs. 30.77%; P=0.013) and hypomagnesemia (97.87% vs. 84.61%; P=0.025) were significantly more prevalent in the BID group. No significant difference in the patient survival (100% TID vs. 100% BID), graft survival (97.43% TID vs. 100% BID; P=0.269) and

biopsy proven acute rejection (15.38% TID vs. 14.89% BID, P=0.95) were seen between two groups.

Conclusion: No significant difference was observed between tacrolimus BID and TID dosing in either the percentage of patients who achieved therapeutic levels or the time to reach therapeutic level.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-321

Poster Title: Antibiotic stewardship intervention package for the outpatient treatment of urinary tract infections: A provider-feedback based approach

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Purpose: The National Action Plan for Combating Antibiotic-Resistant Bacteria issued by the White House in March 2015 recommends establishment of Antimicrobial Stewardship Programs (ASPs) in all outpatient settings by year 2020. Urinary tract infections (UTIs) are the most common indication for antimicrobial prescriptions in the outpatient setting, thus are an ideal target for outpatient ASP intervention. The purpose of this project is to determine if ASP intervention with education and provider-specific feedback can increase appropriate outpatient antimicrobial prescribing for UTIs.

Methods: This project consists of a pre-intervention phase from October 2015 through December 2015 and an intervention phase from October 2016 through December 2016. Eligible patients are those seen in the Charleston and Goose Creek primary care clinics within the Ralph H. Johnson VA Medical Center; have had a documented diagnosis of UTI, cystitis, or asymptomatic bacteriuria; and have been concomitantly prescribed an oral antibiotic associated with UTI treatment, such as penicillins, cephalosporins, fluoroquinolones, sulfamethoxazole-trimethoprim, and nitrofurantoin. The primary aim is to increase appropriate antibiotic usage for the outpatient treatment of UTIs. The following interventions will be routinely performed: patient and prescriber education, provider-specific feedback, one-on-one provider visits by regional VA pharmacy educators, UTI order set, and modification of antibiotic availability in clinic. Patient education will consist of educational posters and fliers in the waiting areas. Provider education will consist of monthly didactic presentations. Provider-specific feedback will consist of de-identified monthly report cards. Secondary aims include reducing inappropriate fluoroquinolone usage for outpatient UTI treatment, reducing inappropriate ordering of urine cultures for outpatient evaluation of UTIs, and assessing for UTI treatment failures.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-322

Poster Title: Secondary prevention of atherosclerosis and cardiovascular disease with statin therapy in the elderly population in a veterans affairs community

Primary Author: Frances Ripepi, William Jennings Bryan Dorn VA Medical Center, SC; **Email:** frances.ripepi@va.gov

Additional Author (s):
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Purpose: There is limited data to determine optimal use of statin therapy in the elderly population. The overall purpose of this study is to evaluate the efficacy and safety of statin therapy for secondary atherosclerotic cardiovascular disease (ASCVD) prevention in an elderly Veterans Affairs population. The primary outcome will be a comparison of the number of major ASCVD events between the statin and non-statin groups. The secondary outcome will assess discontinuation of statin therapy.

Methods: The following single-center, retrospective, observational study was approved by the institutional review board (IRB) to evaluate the safety and efficacious use of statins for secondary ASCVD prevention. The computerized patient record system (CPRS) will be utilized to identify patients 75 years or older with an international classification of diseases (ICD9) diagnosis code of clinical ASCVD, including myocardial infarction (MI), stroke, coronary artery disease, transient ischemic attack, peripheral vascular disease, angina, and coronary artery revascularization at the WJB Dorn VA Medical Center. Patients with familial hypercholesterolemia and those using non-statin lipid lowering therapies will be excluded. The study period will be October 1, 2010 to October 1, 2015. The following data will be collected: demographics, aspirin use, statin use prior to study, pertinent co-morbidities, statin regimen, adverse events, and major ASCVD events (non-fatal MI, cardiovascular heart disease death, non-fatal and fatal stroke) occurring during the study period. Baseline basic metabolic panel, cholesterol panel, and liver function tests will also be obtained. Charts will be reviewed for tobacco use, adherence to statin regimen, and cognitive function test scores, if available. The primary outcome will assess efficacy by comparing the combined endpoint of death due to

coronary heart disease, non-fatal MI, and fatal or non-fatal stroke between the statin and non-statin groups. Safety will be evaluated as the secondary endpoint using discontinuation rate and documented reasoning for discontinuation.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-323

Poster Title: Assessment of glycemic outcomes in patients with type 2 diabetes infected with hepatitis C who achieved a sustained viral response with a direct-acting antiviral

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Additional Author (s):
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Purpose: The purpose of this study is to evaluate potential changes in glycemic control in patients with type 2 diabetes with concomitant hepatitis C (HCV) infection treated with ledipasvir/sofosbuvir, ombitasvir/paritaprevir/ritonavir/dasabuvir, or elbasvir/grazoprevir, to determine the impact of direct-acting antiviral (DAA) therapy on glycemic control. The primary outcome of the study is change in A1c from baseline following DAA treatment course in patients achieving a sustained viral response at 12 weeks or longer (SVR12). Additionally, the study evaluates the effect of DAA therapy on cholesterol and BMI.

Methods: This study has been approved by the Institutional Review Board. The electronic medical record will be used to identify patients with type 2 diabetes and HCV genotype 1 who were treated with ledipasvir/sofosbuvir, ombitasvir/paritaprevir/ritonavir/dasabuvir, or elbasvir/grazoprevir and achieved SVR12 between January 1, 2015, and October 1, 2016. The study will include only those patients at least 18 years of age with an A1c checked within 4 months of HCV treatment initiation and within 4 months of achieving SVR12. Patients with a baseline A1c of less than 6.5% will not be included in the study, nor will patients using insulin pumps or those with a history of liver transplant. Data collected from the medical record will include demographic information, such as height, weight, sex, race, and age; HCV genotype; HCV viral load at baseline and SVR12; A1c, total cholesterol, LDL, HDL, non-HDL cholesterol, triglycerides, BMI, and total daily insulin dose at baseline and SVR12; and whether each patient had previously been treated with ribavirin prior to initiation of DAA therapy. The research analysis will be conducted via retrospective chart review. All data will be maintained

confidentially. Patient characteristics will be assessed using descriptive statistics, and the change in A1c from baseline will be assessed using paired t-test.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-324

Poster Title: Utilization of a risk-prediction model to predict heart failure 30-day readmissions in the Department of Veteran Affairs

Primary Author: Alexander Corboy, William Jennings Bryan Dorn Veterans Affairs Medical Center, SC; **Email:** alexander.corboy@va.gov

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Purpose: Unplanned hospital readmissions within 30 days are often preventable and are readily becoming a measure of healthcare quality. Additionally, preventable readmissions incur a large and unnecessary fiscal cost to the healthcare system. In particular, readmissions within 30 days are disproportionately high amongst patients with heart failure. Identifying heart failure patients at high risk for readmission in advance would empower healthcare facilities to target patients in need of more comprehensive care. This study aims to develop and validate a 30-day congestive heart failure readmission risk-prediction model from readily accessible health information data at the Department of Veteran Affairs.

Methods: A retrospective cohort will be studied to create a 30-day readmission risk prediction model for patients with heart failure within our facility. The primary outcome will be hospital readmission(s) associated with heart failure, defined as any admission or transfer to our facility within 30 days of a previous discharge where the discharging diagnosis is heart failure. Risk factors will be identified utilizing data from the Veterans Health Administration corporate database from fiscal years 2010 to 2015. Significant univariate variables will be used in a multivariate logistic regression model to establish 30-day readmission risk factors. In turn, these risk factors will be utilized to develop a risk-prediction model for 30-day congestive heart failure readmission. This model will be compared to other commonly utilized risk models (LACE, HOSPITAL) evaluating the same observational cohort. The C-statistic will be utilized to assess the accuracy of the various models.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-325

Poster Title: Direct oral anticoagulant event rates in obesity

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Additional Author (s):
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Purpose: Direct-acting oral anticoagulants (DOACs) are approved for the treatment and prevention of venous thromboembolism (VTE) and ischemic stroke prevention in non-valvular atrial fibrillation (AF). Compared to warfarin, these agents have more ideal qualities due to their quick time-to-peak effects, lack of routine monitoring, and limited food interactions. According to each DOAC's package insert, no dose adjustment is necessary for obese patients; however, data is insufficient in regards to the efficacy and safety in these populations. The objective of this study is to evaluate the bleeding and thrombotic rates of obese patients managed on DOACs under their approved indications.

Methods: The institutional review board approved this single center, retrospective, observational study. Using the computerized patient record system (CPRS), all veterans who began DOAC therapy between October 1, 2013 and August 1, 2016 for approved indications will be included. All veterans who received less than one week of anticoagulation with DOACs or diagnosed with a VTE not confirmed by imaging will be excluded. The following data will be collected: demographics, DOAC used, dose, and if followed by a pharmacist, verapamil, diltiazem, or amiodarone use, fill history, proton pump inhibitor use, presence of disease states such as congestive heart failure, hypertension, diabetes, stroke, alcoholism, cirrhosis, and history of bleeding, and baseline and event hemoglobin, platelets, renal function, liver function tests, and INR. All associated patient information will be de-identified and maintained confidentially. Primary outcomes will include comparison of all bleeding and thrombotic rates of obese (body mass index [BMI] greater than 30) versus non-obese patients taking DOACs. Secondary outcomes will include bleeding and thrombotic rates of obese (BMI 30 to 40), severely obese (BMI greater than 40) and non-obese patients taking DOACs for approved

indications, event rates for patients followed by a pharmacist, compliance in patients followed by a pharmacist and number of events occurring in first 3 months of therapy versus after 3 months of therapy.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-326

Poster Title: Effect of a Focused Antibiotic Stewardship Pilot Program at an Ambulatory Care Facility

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Additional Author (s):
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Tasha Standing Soldier

Purpose: The purpose of this study is to evaluate the effect of a focused antibiotic stewardship program on the prescribing practices and appropriateness of treatment of infectious diseases at Rapid City Service Unit (RCSU). The central hypothesis is that the retrospective chart review will reveal that prescribing practices, dosing, and duration of therapy vary greatly and often deviate from both IHS and IDSA guidelines without apparent or documented reasons. The implementation of this program will increase the appropriateness of treatment regimens, decrease reoccurrence rates, and improve resistance patterns, benefiting our patients and the public health of our community.

Methods: This study protocol is being submitted for approval by the Great Plains Area Indian Health Service IRB. In this retrospective chart review, the electronic health record will be used to identify all patients age 18 and older who were diagnosed with one of the three most prevalent infectious diseases and received their first dose of antibiotics during January 1, 2016 through March 31, 2016, and January 1, 2017 and March 31, 2017 at Rapid City Service Unit. Patients will be excluded if they received antibiotics for one of the three identified infectious diseases while also being treated for a concomitant infectious disease that is not part of the pilot program. The information collected will include patient demographics (age, gender, body weight, and height, etc.), chief complaint, diagnosis, type of infection, microbiology data from site of infection, serum creatinine, BUN, WBC count, AST and ALT, concomitant antibiotics, whether source control procedures were performed, return to clinic within 30 day, and adverse drug events.

Results: N/A- Research in Progress

Conclusion: N/A- Research in Progress

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-327

Poster Title: Integrating the "Annie" mobile application into pharmacy medication management clinic to improve patient care and healthcare access.

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Purpose: Medication management clinic appointments are opportunities for clinical pharmacists to evaluate and modify patient medication regimens. Effective evaluation is typically dependent upon patient submission of home testing data (e.g., blood pressure measurements, blood glucose measurements). The Veterans Administration (VA) is developing a mobile phone application ("Annie") that prompts patients to submit daily home testing data via text message to a web-based portal accessible by both patients and providers. The objective of this project is to improve the efficiency of medication management clinic by using Annie to streamline home testing data submission and review.

Methods: Following Pharmacy & Therapeutics Committee approval, patients already enrolled in pharmacy medication management clinic for uncontrolled hypertension and diabetes will be offered the opportunity to trial the Annie mobile application in accordance with ongoing therapy. Patients desiring to trial the application will undergo orientation, which will include assistance in downloading the application, logging in and setting up of preferences, education on its capabilities, and minimum expectations of patients using the application. At the same time, clinic providers will be educated on how to access the application and search for specific patient data. Patient consent to trial Annie will be documented in each patient's progress note so that subsequent clinicians will know to access Annie during follow-on appointments. Once Annie access is established for patients and providers, patients will continue being seen in clinic according to pre-existing clinic standards of practice. At the end of the project period, patient records will be reviewed to determine average participation (number of Annie app submissions per day enrolled). Average number of medication changes per patient will be calculated and

compared to clinic averages. Finally, both patients and providers will be offered the opportunity to provide feedback on the application, specifically regarding ease of use, enjoyment of use, aspects of the application that were particularly beneficial or problematic, and recommendations for improvement.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-328

Poster Title: Improving home naloxone rescue kit availability and education

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Purpose: The primary objective of this quality improvement project is to improve patient access to home naloxone rescue kits. In 2014, there were 18,000 deaths reported from prescription opioid overdose. Increased access to naloxone in the community has the potential to save many lives. This project involves assessing current practices for identifying candidates for the rescue kits through the VA Opioid Overdose Education and Naloxone Distribution (OEND) initiative and finding ways to increase utilization at VA Black Hills Health Care System (VA BHHCS). Secondary objectives include providing provider and patient education on proper and safe use of naloxone rescue kits.

Methods: This quality improvement project will include patients at VA BHHCS with documented opioid dependence and who are using opioid medications chronically, which puts them at a high risk for opioid overdose. The project will be conducted consistent to current standards of the OEND program. Primary interventions include assessing strengths and limitations of current naloxone prescribing practices and providing practitioners with resources to help identify patients at risk for opioid overdose. Initially, baseline OEND utilization reports will be assessed and data on appropriate candidates for naloxone rescue kits will be collected. Prescribers will be provided information on home naloxone use as well as a list of qualifying patients on their service. Secondary interventions include providing patients and caregivers with educational materials upon initial naloxone fill and assessing patient understanding of appropriate use. If the prescriber would like to provide naloxone, pharmacy will fill the prescription and provide written educational materials to the patient. Patients will be contacted via phone call to ensure receipt of the aforementioned and to answer any questions. VA BHHCS OEND utilization will be reviewed to assess impact of the interventions.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 1-329

Poster Title: Compliance with Oryx performance measures: improving assessment and continuity of care for cessation in tobacco users using Lean methodology

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Purpose: It is widely regarded that smoking cessation greatly reduces the risk of many serious health problems. The benefits of quitting may be greater in younger populations, but benefits of quitting may be seen at any age. Oryx performance measures are set by the Joint Commission to support organizations in quality improvement efforts. Oryx measures for tobacco cessation evaluation and follow-up at discharge have been identified as areas for improvement. The objective of this quality improvement project is to identify applicable inpatients, connect them with appropriate avenues for cessation help upon discharge if appropriate, and thus comply with the aforementioned measures.

Methods: Lean methodology will be used to develop an efficient process to assist with tobacco cessation upon inpatient discharge. This will be done by eliminating waste while creating a culture of continuous improvement. The types of waste outlined in Lean are represented by the acronym DOWNTIME: defects, overproduction, waiting, not using human potential, transportation, inventory, motion, and extra processing. Value stream mapping will be employed to identify services involved and outline goals to design the process. Other important steps to include in value mapping are current processes, delays, sources of overburden, and information flows. Services involved will receive education on the new process, tobacco cessation methods, and assistance programs available. The target patient population is inpatients who have used tobacco products within the last thirty days. The five A's of smoking cessation (ask, advise, assess, assist, arrange) will be employed upon patient discharge. Patients will be asked about tobacco status, advised to quit, assessed if they are willing to quit at that time, assisted in the quit attempt by arranging a consult to respiratory therapy or an available cessation program, and then it will be ensured that the patient has an outpatient follow-up

appointment scheduled to increase chances of cessation. After this process is implemented, a further assessment process will begin to identify sources of waste, inefficiency and chances for improvement.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Descriptive Report

Session-Board Number: 1-330

Poster Title: Value of Pharmacists' Interventions in the Emergency Department: two different points of view

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Purpose: To evaluate pharmacists interventions (PI) made in the Emergency Department (ED) focusing on the prevalence and severity of the prescription errors detected.
To compare the clinical value of these interventions assessed from the point of view of a physicians and a pharmacist.

Methods: Prospective study conducted from January to February 2016 in an ED where there is a pharmaceutical resident physically for 2 months a year.
Along this period, the pharmacist validated all the prescriptions of patients who were in the ER, taking into account blood tests, current situation and chronic treatment.
A prescription error (PE) is any discrepancy in pharmacotherapy. The PE were classified by the pharmacist according to their severity using the Overhage's method: potentially lethal, serious, significant, minor and no error.
The PI were classified by the pharmacist into 5 categories: start medication, discontinue medication, change medication, dosage adjustment and drug information.
The PI value was established in triplicate (one clinical pharmacist and two physicians from the ED) according to the Overhage's classification: extremely significant, very significant, significant, somewhat significant, not significance and adverse significance.
Finally, the two physician agreed on their assessments until they achieved a single classification.
The physician-pharmaceutical valuations were compared statistically by Chi square test.
Age, gender, drug (according to Anatomical, Therapeutic, Chemical classification system), PE description and its severity, PI category and its clinical value were recorded.

Results: Three hundred and five patients were reviewed along the study period. Their median age was 75 years [18-97 years]. 54% of them were women.
A total of 149 PI were performed in 84 patients (1.8 PI / patient). This means that there was a prevalence of 27%.
The EP severity rating was: potentially lethal (0,7%), serious (5,4%), significant (67,5%), minor (15,5%) and no error (10,8%).
The PI were classificated as starting medication (39%), discontinuing medication (14%), change medication (17%), dosage adjustment (16%) and drug information (14%).
The main drugs involved were of the groups C (28%), N (22%), A (11%) and B (9%).
The clinical value of the PI according to physician criteria was: extremely significant (1%), very significant (3%), significant (29%), somewhat significant (36%), not significance (30%) and adverse significance (0%).
The clinical value of the PI according pharmacist criteria was: extremely significant (1%), very significant (11%), significant (51%), somewhat significant (15%), not significance (22%) and adverse significance (0%).
The assessments made by the pharmacist and the physicians were significantly different (Chi square = 31.4, $p < 0.001$).

Conclusion: The PE prevalence detected was similar to described in literature and its severity was significant in a high percentage.
However the physician rated the value of pharmacist interventions significantly lower than their pharmacist counterparts. This may be due to different visions on patient management.
Therefore it's very important to have a full-time clinical pharmacist integrated in the multidisciplinary team of the Emergency Department all year long.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Descriptive Report

Session-Board Number: 1-331

Poster Title: Use of Aflibercept in refractory patients to other anti-angiogenic treatments.

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Purpose: Anti-angiogenic drugs are those that inhibit the production of new blood vessels getting delayed or stabilizing the progression of certain eye diseases. Despite their proven effectiveness, a significant number of patients treated for a long period of time develops resistance with progressive loss of response. The aim of the study is to evaluate the efficacy of intravitreal administration of Aflibercept in refractory patients that have used other anti-angiogenic drugs.

Methods: Retrospective observational study of eleven months (05/15 to 04/16). We studied patients who have been refractory to previous antiangiogenic treatments (Ranibizumab and/or Bevacizumab) and have received at least three monthly administrations of Aflibercept. Use of Aflibercept was authorized by the Medical Director in these patients. Data collection was performed using computer applications Oncofarm® , Selene® (electronic medical record review) and retinal optical coherence tomography (OCT). Sex , age, diagnosis , number of antiangiogenic previous administrations , Best-corrected visual acuity (BCVA by ETDRS system) , retinal thickness (OCT measured in microns) and changes in subretinal fluid (SRF) were recorded. The change in BCVA, as well as change in retinal thickness and presence of LSR between the first visit and at the end of the third dose were the efficacy variables assessed in the study. It was felt that the treatment was effective against the following criteria: loss < 15 letters in BCVA (visual results) and reduced > 10 % in retinal thickness as well as visual impairment of SRF (anatomical results).

Results: A total of 19 eyes corresponding to 14 patients (12 women and 2 men) were evaluated , with a mean age of 72.7 years (37-91). While 17 eyes (89.5 %) were diagnosed with wet age-related macular degeneration (ARMD) only two eyes (10.5 %) were diabetic macular edema (DME). 11 eyes (8 patients) were refractory to Ranibizumab while 8 eyes (6 patients) were refractory to Ranibizumab and Bevacizumab. The average number of injections received was 5.4 and 5.5 / 3.6 respectively. As for the evolution of BCVA , 18 eyes (13 patients) maintained their visual acuity (VA) (loss of < 15 letters) after three months of treatment (Mean: 29.5 ± 13.9; p: 0.45). Of the 18 eyes that kept AV, 5 eyes gained visual acuity (> 5 letters). In 11 eyes , the mean macular thickness on OCT decreased from 367.2 to 262.2 microns decreasing by 27.8 % (Mean: 320.4 ± 127.2; p: 0.04). A correlation between the decrease in SRF and macular thickness reduction was observed.

Conclusion: Despite the low number of patients in the study, Aflibercept is shown to be an effective treatment in a significant number of patients resistant to treatment with other anti-angiogenic drugs. Larger studies are needed to evaluate the long-term efficacy.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Descriptive Report

Session-Board Number: 1-332

Poster Title: Effectiveness and safety of romiplostim after eltrombopag in idiopathic thrombocytopenia purpura.

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Purpose: Idiopathic thrombocytopenic purpura (ITP) is an autoimmune disease caused by antibody-mediated platelet destruction. First-line treatment consists of corticosteroids, intravenous immune globulin or splenectomy. Novel thrombopoietin receptor agonist (TRAs), eltrombopag and romiplostim, stimulate platelet proliferation and differentiation. Although TRAs are highly effective and well tolerated for patients with ITP refractory to first-line treatments, the cross-resistance of these TRAs is still unknown.
This report describes the effectiveness and safety of therapy with romiplostim in two patients with IPT refractory to previous treatments, including eltrombopag.

Methods: Patient and disease characteristics, including age, sex, months since diagnosis, type of therapies prior to starting romiplostim, platelet counts, dose and duration of treatment and adverse events were collected through medical records.
Subcutaneous administration 1 µg/kg/week of romiplostim was begun. The dose of romiplostim was gradually increased by 1µg/kg every week until the target platelet count of 50x109/L to 200x109/L was reached, without exceeding the maximum dose (10µg/kg/week). Romiplostim dose was reduced according to increase platelet count during treatment.
Complete response (CR) and partial response (PR) were defined as any platelet count ≥100x109/L and of 30-100x109/L respectively, in absence of bleeding. Non-response (NR) was defined as any platelet count < 30x109/L or bleeding. In addition, adverse events during treatment were recorded.

Results: Patient 1 is a 32-year-old female with acute ITP for 2 months, nonsplenectomized and had received corticosteroid and inmmunoglobulin without increasing platelet count. Eltrombopag was discontinued by no response and two bleeding events and rituximab was not effective. Her platelet count previous romiplostim treatment was 1x109/L. After 8, 12, 16, 20, 24 and 30 weeks of treatment, platelet count increased to 147x109/L, 437x109/L, 123x109/L, 191x109/L, 238x109/L and 185x109/L, respectively. In this patient dose of romiplostim was 8µg/kg at week 8 and was reduced to 3-4µg/kg/week according to increased platelet count. Patient discontinued romiplostim after 31 weeks with platelet count 194x109/L, absence of bleeding and was splenectomized. Nowadays her median platelet count is 260x109/L, untreated. Romiplostim was well tolerated.
Patient 2 is a 79-year-old men with chronic ITP for 5 years, nonsplenectomized and had received corticosteroid and immunoglobulin without improvement in platelet count. Eltrombopag was discontinued by severe erythema and rituximab did not increase platelet count. Platelet count previous romiplostim treatment was 17x109/L. Eight weeks after starting treatment romiplostim was increased to 8µg/kg/week, after 9 weeks there was no response and romiplostim was discontinued, with platelet count of 8x109/L and significant erythema in inferior members, similar to occurred with eltrombopag.

Conclusion: Patient 1 was refractory to eltrombopag and had complete response to romiplostim, without adverse events.
Patients 2 had ITP refractory to eltrombopag and romiplostim, and adverse effects were similar with both TRAs.
The cross-resistance of these two TRAs is still unknown, although the failure of treatment with eltrombopag does not imply the absence of response with romiplostim.
In selected patient, still unknown, romiplostim can improve thrombocytopenia safe and effectively, allowing to perform splenectomy.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Descriptive Report

Session-Board Number: 1-333

Poster Title: Autologous serum eye drops (20%) for the treatment of ocular surface disorders.

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Purpose: Serum and other bodily fluids have been used as natural tear substitutes. The aim of this study is to investigate the use of autologous serum (AS) eye drops (20%) in outpatients with ocular surface disorders who were refractory to conventional treatments.

Methods: AS eye drops were elaborated under aseptic conditions, the blood samples were collected in sterile tubes without anticoagulants. The containers were left standing for 2 hours at room temperature in an upright position. The blood was centrifuged at 4800rpm for 8 minutes. In a laminar flow hood, one milliliter serum was taken and deposited into sterile dropper bottles with 4 ml physiologic serum for a final concentration of 20 percent. The eye drops' stability was three months frozen and five days after opening stored in fridge.
A retrospective cohort study was conducted at a tertiary care center. We included patients who picked up AS eye drops at outpatients department of the hospital pharmacy from December 2006 to January 2016. We created a database that included sociodemographic (age and sex) and pharmacotherapeutic variables (indication, number of dispensing medication, length of treatment, dosage ,number of eyes in treatment and the use of others eye drops which were elaborated and dispensed at the hospital pharmacy). We reviewed electronic prescriptions (Prescriplant®) and clinical histories of the patients included in the study. The efficacy of the treatment was evaluated subjectively (patient's opinion at the doctor visit about the improvement of their subjective symptoms) and adverse effects was a measurement of the safety.

Results: A total of 173 patients were considered for the study, 78.03% of females.Their mean age was 63,87 years(SD 16,69).The use of AS eye drops was indicated for several diseases: corneal diseases (corneal ulcer or corneal persistent epithelial defects) (34.32%);Sjögren syndrome (17.16%);dry eye resulting for autoimmune disease (15.38%);blepharitis or blepharospasm (12.43%);palpebral disorder (4.73%);others syndromes (Cogan syndrome, Fuchs' dystrophy, Terrien degeneration,Posner Schlossman syndrome or Charles bonnet syndrome) (4.14%);graft-versus-host disease(GVHD) (2.96%);radiotherapy treatment (2.96%);conjunctive disorders (2.37%);laser assisted in situ keratomileusis(LASIK) (2.37%); corneal burns (1.18%).

The habitual dosage was every 3 or 4 hours (40.46%). 21,97% patients used the AS only in one eye.The length of treatment was for a long period in 94.22% of the patients.All patients, except one (this patient experimented a sticky sensation with minimal eye discomfort), improved their symptoms with the treatment and no one suffered harmful effects.Patients went to the hospital pharmacy to pick up AS eye drops every 75,89 days (RIC 60.33;90.88).

Other eye drops elaborated and dispensed at hospital pharmacy before or as the same time as AS were; before the use of AS(23.12%):cyclosporine 0.05% (60.00%),ceftazidime and tobramycin (15.00%), cyclosporine 1% (15.00%),acetylcysteine 10% (5.00%),cyclosporine 2% (2.50%),mytomicin 0.02% (2.50%); concomitant treatment(30.06%):cyclosporine 0.05% (80.77%),cyclosporine 1% (7.69%),acetylcysteine 10% (5.77%),tobramycin (3.85%),vancomycin (1.92%).

Conclusion: Indications for AS therapy were mostly; corneal diseases (corneal ulcer or corneal persistent epithelial defects), Sjögren syndrome, dry eye resulting for autoimmune disease and blepharitis or blepharospasm. Patients went to the hospital pharmacy to pick up AS eye drops before 90 days, it ensures the stability of eye drops. Habitual dosage was every 3 or 4 hours in both eyes.

The efficacy of the treatment was evaluated subjectively, it is the main limitation of the study. In spite of this, we can consider AS treatment as a chronical therapy. It is an effectiveness, safety and well tolerated treatment.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-334

Poster Title: Hospital factors that influence accuracy of discharge medications in post-myocardial infarction (MI) patients

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Purpose: Hospital readmission after a myocardial infarction (MI) is costly to the healthcare system, a frequent occurrence, and often preventable. Studies have previously shown that certain hospital and patient factors are known to influence readmission rates. The purpose of this study is to determine if hospital factors and time of discharge are associated with prescribing a comprehensive medication regimen in post-MI patients.

Methods: This retrospective review will examine data from January 1, 1999 through October 30, 2015 from the National Veterans Affairs Health Care System. Inpatients experiencing a ST-segment elevation MI (STEMI) or non-ST-segment elevation MI (NSTEMI) with a discharge date between January 1, 2005 and September 30, 2015 will be evaluated to determine if they were prescribed a comprehensive evidence-based medication regimen at discharge. Optimal therapy is defined as one or more medications from each of the STEMI or NSTEMI categories prescribed or on-hand 3 days after discharge. Optimal post-STEMI therapy will include 1) an angiotensin converting enzyme inhibitor (ACE-I) or alternately an angiotensin receptor blocker (ARB), 2) an antithrombotic agent, 3) a beta-blocker, and 4) a statin. Optimal post-NSTEMI therapy will include 1) an ACE-I or alternately an ARB, 2) an antithrombotic, 3) a beta-blocker, 4) a statin, and 5) a short-acting nitrate. Hospital factors and other variables to be studied include complexity and rurality of the VA facility, number of hospital beds, hospital bed occupancy rate, time of discharge, day of the week of discharge (weekday/weekend), and month of discharge. A subgroup analysis will be conducted to determine if there is a difference in the prescribing

pattern at discharge of first occurrence of MI compared to any recurrence of MI during the study timeframe.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-335

Poster Title: Determining risk of sudden death with common antibiotics and combined angiotensin converting enzyme inhibitor or angiotensin (II) receptor blocker

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Christan Thomas

Purpose: The purpose of this study is to determine if there is any risk of sudden death associated with combining the frequently prescribed antihypertensive drug classes known as angiotensin converting enzyme inhibitors (ACEI) and angiotensin (II) receptor blockers (ARB) with commonly prescribed antibiotics. It will also aim to assess the effect of these combinations on hospitalizations and emergency department visits and assess potential cardiac risk factors that could contribute to sudden cardiac death in this patient population.

Methods: This is a retrospective, population-based cohort study of adult patients (age greater than or equal to 18) in the United States Veterans Affairs Health Care System designed to assess the risk of sudden death in Veterans who are on chronic ACEI or ARB therapy and who, while taking the ACEI or ARB, filled a prescription in the outpatient setting for one of the top five most prescribed antibiotics in the VA system (azithromycin, amoxicillin, doxycycline, trimethoprim-sulfamethoxazole, and cephalexin) at any point between January 1, 2000, and December 31, 2014. Patients will be allowed to re-enter the study if they receive multiple study antibiotics, so long as prescriptions are separated by at least 15 days. Patients will be excluded if they receive any antibiotic simultaneously with the study antibiotic or if there are active prescriptions for an ACEI and an ARB simultaneously.
The primary outcome of sudden death will be defined as mortality that occurs within 14 days of initiation of a study antibiotic. Secondary outcomes include hospitalizations and emergency department visits within 14 days. An additional exploratory outcome will assess potassium

levels and hyperkalemia as a possible mechanism behind sudden death in patients who received a potassium level within 14 days of initiation of study antibiotic.

Results: TBD

Conclusion: TBD

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-336

Poster Title: Herpes zoster vaccination efficacy for secondary prevention of herpes zoster in a Veteran population

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Purpose: This study is being conducted to determine if herpes zoster (HZ) vaccination administered after the first episode of HZ provides secondary prophylaxis of HZ, defined as decreased risk of having a second episode. Secondarily, this study will investigate HZ vaccination efficacy for secondary prevention when accounting for age and certain immunocompromising disease states (diabetes, inflammatory bowel disease, rheumatoid arthritis, human immunodeficiency virus, multiple sclerosis, and systemic lupus erythematosus).

Methods: This study is a retrospective review examining data from January 1, 1999 through August 1, 2016. This study will include patients greater than or equal to 60 years old and diagnosed with herpes zoster (HZ) between January 1, 2008 and February 1, 2015 who had at least 6 months of follow-up. Patients will be excluded if they had an episode of HZ prior to January 1, 2008, were HZ vaccinated prior to their first episode of HZ, or had an active diagnosis of leukemia, lymphoma, or bone malignancy at any time from one year prior to first HZ infection through the end of follow-up. Patients will be categorized into two cohorts: vaccinated at study exit and unvaccinated at study exit. The primary outcome will be incidence of secondary HZ. Subgroup analyses will determine the incidence of secondary HZ infection in each cohort by age and in those diagnosed with immunocompromising disease states. The outcome will also be assessed for association with time to vaccination in the vaccinated cohort.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-337

Poster Title: Comparison of long-acting, short-acting, and combination opioid therapy on all-cause mortality in Veterans using opioids for non-malignant pain

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Purpose: The purpose of this study is to determine if there is a difference in all-cause mortality in opioid users using long-acting opioid monotherapy, short-acting opioid monotherapy, or a combination of both. The results of this study will help direct future research and inform clinicians regarding the safety of opioid prescribing practices.

Methods: This population-based, retrospective cohort study will examine data for opioids prescribed between January 1, 2003 and July 31, 2015 within the United States Veterans Affairs Health Care System. Participants will be excluded if they had any diagnosis of malignancy, an indication of terminal illness, active enrollment in a palliative care or hospice program, or any history of a suicide attempt or self-inflicted injury. Study drugs will fall into two categories – long-acting and short-acting opioids. Participants will be allocated to one of three groups: long-acting opioid monotherapy, short-acting opioid monotherapy, or combination opioid therapy. All opioid medications will be standardized to morphine equivalent daily doses (MEDD) to facilitate analysis. Data will be tracked by total time spent within a group in person-years, and participants may switch groups indefinitely based on concurrent medications prescribed. The primary endpoint of all-cause mortality will be compared between the three groups. Analysis of secondary endpoints will include stratification of all-cause mortality by age, MEDD, and a composite of substance use disorder and pulmonary dysfunction.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-338

Poster Title: Evaluating a CIWA-Ar Driven Benzodiazepine Loading Protocol for Alcohol Withdrawal in Medical and Psychiatric Patients at a Dual-Campus Veterans Hospital

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Additional Author (s):

Purpose: The main goal of alcohol withdrawal syndrome (AWS) treatment is to prevent the development of severe symptoms such as seizure, delirium, and death, and to improve patient's quality of life. Symptom-triggered and loading protocols utilizing Benzodiazepines (BZDs) are first-line in the treatment of AWS; however, execution of these protocols varies greatly across practice. The purpose of this study is to assess incidence of adverse outcomes associated with using a benzodiazepine loading protocol for alcohol withdrawal management in medical and psychiatric inpatient at a dual-campus veteran's hospital and to identify potential variables associated with negative outcomes to aid in quality improvement.

Methods: This study will be submitted to the Institutional Review Board for approval. Data will be extracted from computerized patient records system. Patients included are those ≥18 years of age admitted to medical inpatient or psychiatric inpatient between December 1, 2015 and May 31, 2016 who were treated for alcohol withdrawal. Patients who will be excluded are those with epilepsy, received BZD outpatient for the treatment of AWS at home, and those who were transferred to higher level of care for reasons other than complications of AWS. Baseline demographic data extracted will include age, race, gender. Other demographic data that will be extracted manually will include: number of hours/days since the last drink, drinks per day, history of alcohol withdrawal seizures or delirium, and whether they were loaded with BZD upon admission. Benzodiazepine specific data will be extracted to include initial and total BZD dose per patient, use of scheduled BZD, duration of treatment with BZD, length of stay, number of patients who received ≥ 1 dose of BZD, and whether patients completed BZD load. Composite adverse outcomes will include number of patients who experienced seizures, delirium, or those transferred to higher level of care.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-339

Poster Title: Assessing pharmacists' influence in ensuring appropriate transitions of care: a focus on anticoagulation

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Purpose: Transitions of care between different healthcare settings can increase the risk of medication errors, possibly resulting in adverse drug events, increased hospital stays, and hospital readmissions. In 2015, the Food and Drug Administration received 34,765 adverse drug event reports for oral anticoagulants. Due to the complexities and risks of anticoagulants, ensuring appropriate transitions of care is essential to provide safe, effective therapy. Pharmacists' unique knowledge of pharmacology, pharmacokinetics, and drug interactions makes them well-suited to ensure that transitions of care are optimized. This study will evaluate the impact of clinical pharmacists' on the management of anticoagulants within transitions of care.

Methods: This will be a single-center, retrospective, observational analysis of veterans at the Veterans Affairs Tennessee Valley Healthcare System (TVHS) Nashville campus from July 1, 2011 to June 30, 2016. Patients who received rivaroxaban, apixaban, dabigatran, warfarin, fondaparinux, or enoxaparin at discharge from an inpatient setting or the emergency department who also received follow-up care in an outpatient clinic will be evaluated. Patients will be excluded if their primary care or anticoagulation is managed outside TVHS or if they are discharged to a long-term care facility or short-term rehabilitation facility. The primary objective of this study is to evaluate the percentage of patients who received appropriate anticoagulation at time of discharge before and after the implementation of decentralized clinical pharmacists. Secondary endpoints include assessing the number of pharmacists' interventions, whether patient education was provided prior to discharge, and time to

outpatient follow-up for anticoagulation management. The following data will be collected: age, gender, race, weight, serum creatinine, and prescription information for anticoagulants and interacting medications. Manual chart review will be used to determine appropriate anticoagulation based on dosing, indication, renal function, weight, and the presence of major drug-drug interactions.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-340

Poster Title: Evaluation of pneumococcal vaccination among veterans: A look at inpatient utilization of pneumococcal vaccines

Primary Author: Jakob Fann, VA Tennessee Valley Healthcare System, TN; **Email:** jakob.fann@va.gov

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Purpose: In the Veterans Affairs healthcare system 55 percent of dollars spent on community acquired pneumonia are in patients 65 years or older. There are currently two vaccines approved for use in prevention of pneumococcal diseases in this patient population, pneumococcal conjugate vaccine 13 and pneumococcal polysaccharide vaccine 23. To increase pneumococcal vaccination rates, facilities have implemented various interventions such as physician reminder notifications. This study will evaluate the utilization of both previously mentioned pneumococcal vaccines in hospitalized patients greater than or equal to 65 years of age, following the implementation of a reminder tool within the electronic medical record.

Methods: This is a single center, retrospective, observational analysis of two, three month time periods, both prior to and following reminder tool implementation. Patients will be included if they are 65 years and older with an index hospitalization greater than 72 hours, excluding patients with an allergy to the vaccines or any of the components, and those with disease states with an indication for alternative administration schedules per current Advisory Committee on Immunization Practices recommendations. In order to detect a 10 percent change in vaccine utilization, we will require 270 patients in each study period to achieve 80 percent power. The primary objective of this study is to evaluate the change in rate of inpatient utilization of pneumococcal conjugate vaccine 13 and pneumococcal polysaccharide vaccine 23 before and after the implementation of an electronic reminder tool within the electronic medical record. The secondary objective of this study is to evaluate the appropriateness of pneumococcal conjugate 13 and pneumococcal polysaccharide 23 vaccines, both administered and omitted, per current Advisory Committee on Immunization Practices recommendations, specifically in regards to choice, scheduling and timing of vaccines, along with the cost associated with vaccines administered inappropriately, according to the aforementioned recommendations.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-341

Poster Title: Comparison of gabapentin and pregabalin: measuring clinical impact of time to therapeutic dosing among patients achieving therapeutic dosing for pain

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Purpose: Gabapentin and pregabalin are commonly prescribed first-line agents for neuropathic pain, but a head-to-head comparison is lacking. Therapeutic dose targets for neuropathic pain have been established for in patients with normal renal function (gabapentin 1800-3600mg/day; pregabalin: 150-600 mg/day). There is no data available on the therapeutic impact or consequences for patients when selecting one medication over another. There would be ethical and pharmacoeconomic considerations if one were shown to improve long-term outcomes. The study purpose is to evaluate the clinical impact of agent selection measured by percentage of patients achieving therapeutic dose, time to therapeutic dose, and percentage continuing therapy.

Methods: This study is a retrospective observational analysis in a single healthcare system. Data will be pulled from the Veterans Integrated Service Network 9 data warehouse identifying all veterans with new start prescriptions for either gabapentin or pregabalin between January 1st, 2011 and December 31st, 2015. The following data will be extracted: age, weight, gender, height, race, comorbidities, prescriber, and concomitant analgesics at the date of initiation. Participants with outpatient initiations of gabapentin or pregabalin with a documented indication for pain will be included in the study. Participants will be excluded if they have a creatinine clearance less than 60 ml/minute at the time of initiation or prescribed gabapentin or pregabalin for a non-pain related condition. Manual chart reviews will be conducted to identify eligible participants based on the aforementioned criteria. The primary endpoints are percentage of patients achieving therapeutic dosing, time to therapeutic dosing, and

percentage of patients continuing on therapy. The secondary endpoints will include discontinuation rates, documented causes of discontinuation, and whether a relationship between titration rate and discontinuation exists.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-342

Poster Title: Evaluation of a pharmacist-led clinical video telehealth (CVT) group for opioid overdose prevention and naloxone education

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Additional Author (s):
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Purpose: Veterans are almost twice as likely to have accidental overdose compared to the U.S. population. In response to the increasing number of overdose deaths, opioid overdose education and naloxone distribution (OEND) programs were established. Currently, no published literature has evaluated OEND programs in the setting of a pharmacist-led telehealth clinic. Telehealth allows for pharmacists to reach Veterans outside of VA locations, and provide a level of comfort for patients who have concerns surrounding stigma. This project will evaluate the effectiveness of a pharmacist-led CVT clinic on the distribution of naloxone for Veterans who are at high risk of opioid overdose.

Methods: This project is a single-center, retrospective, observational analysis of adult Veterans at both campuses and two community-based outpatient clinics of the VA Tennessee Valley Healthcare System from January 1, 2016 through December 31, 2016. All patients who have had one fill of naloxone during the pre-specified time frame will be included in this study. Any patient who is receiving hospice care, palliative care, or living in the VA TVHS community living centers will be excluded from the project.
The primary objective will be to assess how the development and implementation of a pharmacist-led CVT clinic affects naloxone distribution rates in patients who are considered at high risk for an opioid overdose. Secondary objectives include Stratification Tool for Opioid Risk Mitigation (STORM) and Risk Index for Overdose or Serious Opioid-induced Respiratory (RIOSORD) scores, percentage of naloxone distributed, and naloxone prescribed in the CVT

clinic vs other locations. Additional objectives include number of patients referred by a physician vs identified as eligible by a pharmacist.
This project will be submitted to the Institutional Review Board for approval. Patients identified through PDSI as meeting inclusion/exclusion criteria will have the following data collected: age, gender, race, comorbidities, prescriber, and concomitant benzodiazepine therapy. Manual data collection will be done utilizing the Computerized Patient Record System (CPRS). All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 1-343

Poster Title: Impact of Provider Education and Implementation of Symptom-triggered Therapy, on Outcomes, for Patients with Alcohol Withdrawal.

Primary Author: Steven Braun, Central Texas Veterans Health Care System, TX; **Email:** u2steven8600@gmail.com

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Purpose: Previous, published studies have shown that for patient's undergoing alcohol withdrawal, symptom-triggered benzodiazepine therapy based upon CIWA-Ar (Clinical Institute Withdrawal Assessment for Alcohol Scale) led to decreased total benzodiazepine use compared to fixed-dose therapy. The objective of this project is to determine whether provider education and the implementation of a symptom-triggered benzodiazepine therapy option in a currently existing order set containing only a fixed-dosing therapy option, would aid in decreasing cumulative benzodiazepine use within this population.

Methods: Quality improvement project will utilize a retrospective chart review of the computerized database, where patients will be selected based on a diagnostic code of alcohol withdrawal in addition to receiving at least one dose of a benzodiazepine while inpatient. The project time frame will be 6 months prior and 6 months after the new symptom-triggered option is added to the alcohol withdrawal medication order set. Current providers will be educated on the new option and will have the opportunity to ask questions regarding the details of the new symptom-triggered option. Patient's clinical and baseline data will be collected in this study, which will include the patient's age, gender, race, past medical history, and outpatient medication records. Other clinical data will include the inpatient medication record (including benzodiazepine usage), CIWA-Ar scores, recorded days of hospitalization, ADRs, vitals, and pertinent lab values. All data including PHI will be stored on an encrypted drive and destroyed after data analysis is complete. Data collected regarding the cumulative amount of benzodiazepine use will be compared between the already in place fixed-dosing protocol and the new option of symptom-triggered treatment based on CIWA-Ar scores. The comparison will be analyzed to determine if the new therapy option reduced benzodiazepine use and length of

stay in this population. Project has been submitted for determination of exemption from human subjects research.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-344

Poster Title: Double the Fun: Psychiatric Exacerbations in Veterans Receiving Concomitant Oral Antipsychotics and Long-Acting Injectable Antipsychotics

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Purpose: Concomitant use of long-acting injectable antipsychotics (LAIs) and oral antipsychotics beyond initiation phase for schizophrenia is not supported by evidence nor recommended by LAI manufacturers. This study is a continuation of a previous study that demonstrated concomitant use of LAIs and oral antipsychotics are used in a significant portion of schizophrenic patients. The primary objective of this study is to evaluate differences in patient severity between patients receiving concomitant LAI and oral antipsychotic medications as compared to those receiving only LAIs as recommended. A secondary objective is to compare antipsychotic related adverse events between the populations.

Methods: This study has been submitted to the Institutional Review Board for approval as an extension to a previously approved study. This will involve a retrospective chart review at three outpatient mental health clinics within a Veterans healthcare system in the Southwestern United States. The subjects will be the same as those utilized in the first portion of this study; patients were randomly selected from patients who were diagnosed with schizophrenia or schizoaffective disorder and received a second generation (SGA) LAI as an outpatient. Subjects are separated into to two groups, (1) those receiving LAI SGA monotherapy and (2) those receiving both LAI SGAs and oral antipsychotics. Data collected in the first phase of the study include: patient age, gender, race, diagnosis, type of LAI, type of oral agent. The following data will be collected: emergency room visits, number of inpatient psychiatric admissions, days of inpatient psychiatric admission, reported adverse medication events. All data will be recorded without patient identifiers and maintained confidentiality. A student t-test or Wilcox rank-sum will be used to compare the number of emergency department visits and inpatient psychiatric admissions between groups. Chi-squared tests will be used to compare occurrence of adverse

drug effects related to antipsychotic medications. ADEs will be categorized as mild, moderate, or severe as defined in the Veterans Affairs Adverse Drug Event Reporting System.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-345

Poster Title: Differences in outcomes of pharmacist-provided versus student pharmacist-provided medication counseling on transitions of care in patients in the Central Texas Veterans Healthcare System

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Additional Author (s):

Purpose: The objective of this quality improvement project is to review the local impact on transitions of care by pharmacist and student pharmacist patient counseling on medication therapy. The aims of the study are (1) to determine the number of patients who currently receive discharge counseling from a pharmacy professional (2) to determine if there is a difference in the number of patients that experience improved health outcomes, such as fewer mediation discrepancies noted at follow-up, improved medication adherence, decreased readmissions, and increased time to readmission, after pharmacist intervention.

Methods: Retrospective chart reviews will be performed on all patients who had inpatient stays on the Med/Surg telemetry and general medicine floors of the Olin E. Teague Veterans Hospital from July 1, 2015 to July 1, 2016. Patients who received pharmacist counseling will then be identified by Clinical Pharmacist Notes or Student Progress Notes in their electronic medical chart. Data from patients who received pharmacist counseling will be compared to patients who received resident or student pharmacist counseling. Outcomes will be compared between the two groups. The following data will be collected: Disease state related to chief complaint, if said disease state is new or preexisting, medications prescribed or discontinued during hospitalization, age, gender, ethnicity, chronic comorbidities, anticoagulation states and medication used for anticoagulation, refill history 4-months post-discharge, readmissions for the same disease state within 30 days due to medication non-compliance or medication errors, and time to readmission. All data will be recorded without patient identifying information and presented using descriptive statistics. This protocol has been submitted to the IRB for determination of exemption from classification as human subjects research.

Results: n/a

Conclusion: n/a

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-346

Poster Title: Effect of standardization of vancomycin infusion rates on red man syndrome

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Purpose: Red man syndrome (RMS), a rate-dependent infusion reaction, is a characteristic adverse reaction to vancomycin. While manufacturers recommend no greater than 10mg/min, the 2009 vancomycin guidelines suggest that faster infusion rates may be appropriate, up to 30 minutes for every 500 mg administered. The purpose of this quality improvement project is to explore if an increase in the incidence of red man syndrome has occurred following an increase in vancomycin infusion rates at our health system, which previously ranged from 11 to 14mg/min to the current standardized rate of 16.7mg/min (15 minutes for 250mg given).

Methods: This retrospective, observational quality improvement project will be conducted at a single Veterans Affairs hospital in the Southwestern region of the United States. Medical charts will be reviewed by searching for key words such as “red man syndrome,” “vancomycin,” and “rash.” Hospitalized patients who received at least one dose of parenteral vancomycin will be included. Patients will be excluded if they initiated vancomycin preoperatively, received systemic steroids or antihistamines during vancomycin therapy, or received an extremely low outlier rate of 500mg over 60 minutes. The project will aim to include about 400 patients prior to implementation (from July to November, 2015), and about 400 patients after the standardization (from January to May, 2016). A statistician will use relative risk and confidence interval to compare the risk associated with the increased infusion rates.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-347

Poster Title: Evaluating the impact of an academic interdisciplinary patient aligned care team on patients and trainees within a veterans affairs academic medical center

Primary Author: Ashley Adams, Michael E. DeBakey VA Medical Center, TX; **Email:** ashley.adams3@va.gov

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Purpose: The Office of Academic Affiliations, associated with the Veterans Healthcare Administration, has implemented a pilot project called the Centers of Excellence (COE) in Primary Care Education. This project will focus on implementation of an interprofessional Academic Patient Aligned Care Team (iAPACT) within the primary care setting to incorporate the framework of the patient-centered medical home to optimize clinical services provided to Veterans by medical trainees. The purpose of this research investigation is to evaluate pharmacy's involvement within the iAPACT based on feedback from patients, other medical trainees, and pharmacy residents through surveys and semi-structured interviews.

Methods: The design will be multifaceted to objectively capture the role of pharmacists within the iAPACT team. The study will be evaluating the primary objective of patient perceptions of the iAPACT team with the secondary objectives of medical trainees' and pharmacy residents' perceptions of being involved in an interprofessional training program within the COE. This project will utilize a retrospective pre- and post-implementation survey design to assess the primary objective of patient satisfaction with iAPACT and the perceived benefits. The survey will be disseminated in January and February of 2016 (3 months after pharmacy involvement begins).
To measure secondary outcomes, a survey will measure medical trainees' experiences of interprofessional education and a semi-structured interview will assess pharmacy residents' experiences. The survey evaluating medical trainees' perceptions will be completed before beginning their COE rotation and then at times as designated by the trainee's length of time in

the program. Disciplines included are: medicine, nursing, physician assistants, pharmacy, and mental health. In addition to the surveys, a semi-structured interview will be completed with the pharmacy residents who participate in COE at the end of each resident's one month rotation. All data from the surveys and questionnaires will be gathered until February 2016 for analysis. Information gathered will be assessed using appropriate statistics based on the qualitative and quantitative data collected.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-348

Poster Title: Optimization of bulk medication utilization to improve patient care and decrease missing dose requests, while decreasing pharmacy expenditures in a large academic teaching facility

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Purpose: The primary objective of this project is to determine an effective method to transfer bulk medications between nursing units for patients during their hospital admission. The secondary objective is to reduce the amount of nursing time spent on missing medication dose requests for bulk products, decrease the amount of medication waste, decrease unnecessary pharmacy spending, and improve patient care while preventing delays, by providing medications at the point of care.

Methods: Bulk medications returned to the inpatient pharmacy will be collected for a period of three months and sorted based on dosage form and drug name. A cost benefit analysis will be conducted to compare the amount of medication requests to the amount of medications returned to the pharmacy. The analysis will focus on bulk medications returned from the third floor medicine unit. After medication is collected and a cost benefit analysis is performed, nurses on each shift of a medicine unit will be asked to follow a specific standard of practice for three months to help with the transferring of medications. Upon transfer, the nursing staff will be required to document the transfer of all bulk medications not provided in the automated dispensing cabinets to the accepting nurse on the transfer unit. A section for medication transfers will be added to the nursing transfer summary sheet template in the electronic health record.
Patients included in this study must be admitted to the hospital for a minimum of three days, and prescribed at least one bulk medication. The patient must be admitted to the third floor medicine unit initially upon admission into the hospital. Patients excluded from the study are

patients not admitted to the third floor medicine unit, and patients with a hospital length of stay less than three days.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 1-349

Poster Title: Incidence of delirium and evaluation of risk factors in a critically-ill Veteran population

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Purpose: Delirium is estimated to occur in up to 80% of critically ill patients and is associated with an increased risk of mortality, more ventilator days and a longer hospital length of stay. The identification and treatment of modifiable risk factors has been shown to decrease negative outcomes, however, there is limited data for intensive care unit (ICU) delirium in veterans. The purpose of this quality improvement project is to identify risk factors associated with development of delirium in critically-ill veterans.

Methods: A retrospective, observational chart review will be conducted on all adult patients admitted to the medical intensive care unit (MICU) and the surgical intensive care unit (SICU) at the Michael E. DeBakey Veterans Affairs Medical Center between October 1, 2016 and February 28, 2017. Confusion Assessment Method for the ICU (CAM-ICU) will be completed on all MICU and SICU patients by the bedside nurse at least twice daily. All patients admitted to the ICU during this time frame will be included in the study. Exclusion criteria include: patients admitted for less than 48 hours and patients who are unable to participate in CAM-ICU (Richmond Agitation-Sedation Scale score of -4 to -5, hearing impairment, cognitive deficits, and inability to understand English). The primary objective of this quality improvement project is to determine the incidence and identify risk factors associated with development of delirium in critically-ill veterans. Secondary objectives include all-cause mortality, mechanical ventilator days and ICU and hospital lengths of stay. The primary objective and baseline characteristics will be analyzed using chi-squared or Fischer's exact test as appropriate; a p-value of less than 0.05 will be considered significant. Secondary objectives will be analyzed using chi-square for categorical

variables and Student's t-test for continuous variables. Univariate and multivariate analysis will be conducted to evaluate risk factor variables in relation to patient delirium status.

Results: n/a

Conclusion: n/a

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-350

Poster Title: Evaluation of statin therapy in liver disease

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Purpose: Patients with liver disease are at higher risk of cardiovascular events compared to the general population. The objective of this study is to evaluate statin therapy prescribing patterns and compliance to the 2013 American College of Cardiology/American Heart Association Blood Cholesterol guideline recommendations in a liver disease population at the Michael. E. DeBakey Veterans Affairs Medical Center (MEDVAMC).

Methods: A retrospective chart review of statin use in adult patients with stable liver disease will be conducted. Patients will be identified via hepatology clinic records and assessed for a two year timeframe following the initial clinic visit. Using the computerized patient record system, appropriate statin therapy will be determined in accordance with the 2013 American College of Cardiology/American Heart Association guidelines. Patients included are those age >18 years old with stable liver disease who received care at the MEDVAMC hepatology clinic from May 1, 2014 through August 31, 2014. Exclusion criteria include decompensated liver disease in the previous 90 days, documented history of allergy to statin or statin-induced rhabdomyolysis prior to study start, adults >76 years old, absence of lab work within prior two years, and acute liver failure. Mortality, cardiovascular, and liver outcomes will also be assessed. Data collected will include patient characteristics, comorbidities, hospitalizations, LFTs, INR, albumin, bilirubin, lipid panels, etiology of liver disease, statin therapy, escalation of liver disease treatment, liver disease decompensation, and MELD scores. Statistical analysis will include descriptive statistics and univariate and multivariate logistic regressions. All data will be collected without patient identifiers and maintained confidentially. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-351

Poster Title: Rates of Clostridium difficile infections associated with the frequency-adjusted use of antibiotic agents in an academic Veterans Affairs Medical Center

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Purpose: Although use of any antibiotic agent has been established as a major risk factor for Clostridium difficile infections (CDI), there has been ongoing debate about which specific agents are most commonly implicated. Various studies have demonstrated an increase in CDI resulting from use of 3rd generation cephalosporins, clindamycin, and fluoroquinolones, but few have adjusted for the frequency with which these antibiotics are used in the patient population under study. Both the increasing use of antibiotics in the U.S. and the increasing incidence of hospital and community-acquired CDI indicate a need for further elucidation into factors predisposing to CDI.

Methods: A retrospective study will be conducted on data from July 2011-June 2016. Patients with a positive C. difficile fecal PCR assay who have previously received >2 days of treatment with clindamycin, a fluoroquinolone, or a third-generation cephalosporin will be identified with the institution's antibiotic surveillance software. Patients included in the study must have received treatment with clindamycin, a fluoroquinolone, or a third-generation cephalosporin as monotherapy or in pre-specified combination therapy in the 30 days preceding the positive assay. Patients will be excluded if they received any antibiotic agent in addition to the pre-specified antibiotic combinations, or if they have had a positive fecal PCR assay for C. difficile in the preceding 12 weeks. The institution's pharmacy information technology software will be used to gather the number of prescriptions dispensed for all antibiotic agents over the same time period. Odds ratios will be calculated and analyzed for inpatients and outpatients receiving clindamycin, a fluoroquinolone, or a third-generation cephalosporin. Other data collected for

secondary outcomes will include use of a proton-pump inhibitor or histamine 2-receptor antagonist at time of positive C. difficile fecal PCR and age.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-352

Poster Title: Assessment of asymptomatic bacteriuria and urinary tract infection treatment in the emergency department

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Additional Author (s):
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Purpose: Asymptomatic bacteriuria is defined as the isolation of bacteria from the urine without associated urinary symptoms. The Infectious Diseases Society of America advocates against screening for and treatment of asymptomatic bacteriuria in most populations. Despite these recommendations, patients often receive antimicrobials in the emergency department based on urinalysis results or non-urinary symptoms. The primary objective of this study is to assess the appropriateness of empiric management of asymptomatic bacteriuria and urinary tract infections in the emergency department of a Veteran Affairs Medical Center.

Methods: This study will be submitted to the Institutional Review Board for approval. This single-center retrospective cohort study will include all adult patients 18 years or older who have urine cultures collected in the emergency department with a positive result from July 2015 through June 2016. Pregnant patients and patients subsequently admitted to the hospital from the emergency department will be excluded. The research population will be identified using a clinical surveillance system and the electronic medical record system, and the following data will be collected: age, race, gender, height, weight, previous antibiotics within 30 days, antibiotic allergies, past medical history, urinary symptoms, systemic infection symptoms, documented urine collection method, urinalysis results, urine culture results, study determined infection result, initial antimicrobial prescribed, uropathogen susceptibility, antimicrobial changes within 30 days, and 30-day emergency department, hospital admission, or subsequent clinic appointment with report of urinary symptoms or adverse drug reactions related to

antimicrobial(s). Descriptive statistics will be utilized to analyze patient characteristics and outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-353

Poster Title: Clinical outcomes of acute osteomyelitis in spinal cord injury patients at a Veteran's Affairs teaching hospital

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Purpose: A common complication of an ineffectively treated pressure ulcer in spinal cord injury (SCI) patients is contiguous osteomyelitis. However, studies providing information about the etiology of osteomyelitis as well as effectiveness of the current standard of care in this patient population are very limited. This study aims to evaluate the clinical outcomes and etiologic characteristics of SCI patients in the treatment of osteomyelitis at the Michael E. DeBakey Veterans Affairs Medical Center (MEDVAMC).

Methods: A retrospective chart review will be conducted using TheraDoc® and Computerized Patient Record System (CPRS) to search from January 1st, 2013 to July 1st, 2016. Patients who are at least 18 years of age, diagnosed with acute pelvic and/or vertebral osteomyelitis with a positive bone culture and received antibiotic treatment at the MEDVAMC will be included in the study. Patients with osteomyelitis of other sites or with palliative care will be excluded. The patients' demographic data, location of osteomyelitis, type of surgical intervention for management of the infection, laboratory values, vitals, comorbidities, concomitant infections, microbiologic results, antimicrobial drug regimen and antibiotic drug levels will be recorded. The primary objective of this study is clinical cure at the end of 6 weeks of treatment or at the earliest visit after the completion of treatment. Secondary objectives include comparing clinical cure of osteomyelitis caused by gram positive bacteria, gram negative bacteria and combination of both, appropriateness of antimicrobial dosing based on the minimum inhibitory concentration and reinfection rates at 6 months post-treatment or next earliest visit. Simple

descriptive statistics, Chi-square test or Fisher's exact test will be used for data analysis as appropriate.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-354

Poster Title: Analysis of referrals and interventions implemented by pharmacy practice residents within the Primary Care Center of Excellence at a Veterans Affairs (VA) teaching hospital

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Purpose: The Center of Excellence in Primary Care Education (CoEPCE) is an innovative clinic present in several Veterans Affairs hospitals currently. By incorporating trainees from several backgrounds of health care, the CoEPCE aims to expand the presence of interprofessional education into post-graduate training. While the CoEPCE is present at several hospitals, incorporation of pharmacy practice residents within this clinic has varied between locations. The goal of this project is to qualify the impact of pharmacy practice residents at the Micheal E. DeBakey VA CoEPCE and to draw conclusions from the results for effective utilization of the residents in the future.

Methods: A quality improvement study will be completed to analyze referrals to and subsequent interventions initiated by pharmacy practice residents within the CoEPCE from October 2016 to March 2017. Using the electronic record system within the VA (CPRS) and the pharmacist intervention tracking tool (PhARMD), a retrospective chart review will be completed focusing on the patients seen by pharmacy practice residents and the interventions initiated thereafter. The primary outcome of this project is the analysis of interventions implemented which includes identifying the initiation or discontinuation of pharmacotherapy, adjustment of medication doses, and initiation of non-pharmacological lifestyle interventions. Secondary outcomes will include the type of follow-up completed by the resident, the number of follow-up interactions with the patient, number of interventions initiated for disease states that were not the primary reason for referral, time to goal of therapy, and identification of the referral requestor. In addition, a cost-reduction analysis will be completed and the outcomes will be

assessed using descriptive analysis. Following the identification of this information, conclusions will be drawn on the proper utilization of the pharmacy practice resident within the CoEPCE.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-355

Poster Title: Buprenorphine for the treatment of Post-Traumatic Stress Disorder

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Purpose: The core treatment of Post-Traumatic Stress Disorder (PTSD) is selective serotonin reuptake inhibitors (SSRIs) for negative mood/thoughts, although remission is only around 30% with them. Many patients will self-treat with opiates, but there is perhaps a deeper underlying mechanism for improvement of PTSD symptoms. Because of its involvement in dysphoric mood and anxiety/stress responses, it is likely that antagonism of the kappa opioid receptor (KOR) system represents a potential target for the treatment of PTSD. The aim of this study is to compare the response of PTSD symptoms when antagonizing KOR via buprenorphine/naloxone compared to SSRIs or opioid therapy.

Methods: A retrospective chart review of adult patients in the MEDVAMC between the dates of June 1, 2013 and June 30, 2016 will be conducted. Inclusion criteria include patients with a documented diagnosis of PTSD from either primary care or mental health clinics during the study timeframe with at least two (2) documented PTSD scores (either PCLC or PC-PTSD). Exclusion criteria include patients not prescribed at least one of the study medications (i.e., buprenorphine, an SSRI, or an opiate for chronic pain), as well as patients not on the study medication for at least thirty (30) days. For the primary outcome, the average standardized PTSD score for each group will be compared using a one-way analysis of variance (ANOVA). For the secondary outcome, the average change in first and last standardized PTSD scores (adjusted to a per diem basis) will be compared, again using a one-way ANOVA. Descriptive statistics will be used to report patient characteristics data. It was determined that a sample size of N=165 would ensure that a two-sided test with α =0.05 would have 80% power to detect a 1 point

difference in PTSD scores. The sample size needed is 165 patients across all treatment arms, with 55 patients per treatment arm utilizing 1:1:1 randomization.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 1-356

Poster Title: Evaluating the impact of a pharmacy resident driven CoEPCE care plus outpatient clinic at the Michael E. DeBakey VA Medical Center

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Purpose: The Center of Excellence in Primary Care Education (CoEPCE) is a pilot project within the Department of Veterans Affairs that is aimed to optimize interdisciplinary care provided by healthcare trainees. As part of the CoEPCE project, a care plus clinic will be established with the goal of providing a same day walk-in service that offers the opportunity to consult pharmacists without the need for a scheduled appointment. The purpose of this project is to evaluate the impact of pharmacists within a primary care clinic aimed to improve accessibility for time sensitive medical conditions or for additional pharmacologic education and management.

Methods: A quality improvement (QI) study will be completed to assess the effectiveness of a same day walk-in clinic within the CoEPCE. Data will be collected from October 1, 2016-February 28, 2017. The primary objective is to investigate the impact of pharmacy residents in the CoEPCE care plus clinic by assessing the type and average number of interventions per patient. The secondary objectives include the following: the primary reason for the walk in visit, the disease states managed, the average time of each visit, and patient characteristics, as well as, a cost prevention analysis. This QI project is a retrospective review that will utilize the VA electronic medical database (CPRS) and the VA outpatient intervention capturing tool (the PhARMD Tool) to investigate the specified objectives. Information collected will be assessed using appropriate statistics based on the descriptive data collected.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 1-357

Poster Title: Reducing readmissions through transitions of care for heart failure patients: a retrospective quality improvement and program evaluation

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Purpose: The purpose of this retrospective review was to analyze the efficacy of intensive follow-up care post-discharge for a heart failure admission and the implementation of a quick order set to schedule follow-up prior to discharge. Compliance with scheduling and attendance of post-discharge follow-up appointments, as well as a comparison among the different providers—Primary Care Physician, Patient Aligned Care Team Clinical Pharmacy Specialist (PACT CPS), and Cardiology, was evaluated. Characteristics of patients with a congestive heart failure readmission within 30 days were assessed in order to provide further direction and potential areas of improvement.

Methods: Patients were included for review if a hospitalization with a primary diagnosis of congestive heart failure occurred between May 2012 and December 2015. Information was collected in three incremental date ranges to evaluate data at baseline and each intervention. Baseline characteristics extracted from a pre-existing quality management database for analysis. Data such as average total daily doses of cardiovascular medications, utilization of the quick order set, and ejection fraction were collected retrospectively. Patients were considered readmitted if the next admission date for any cause was within 30 days of the previous post-discharge date. Additional hospitalizations occurring within the 30day post-discharge timeframe were not counted as additional admissions per Centers for Medicaid and Medicare Services (CMS). Analysis included 30 day all-cause readmission rates and the percentage of visits scheduled and attended. Patients were excluded if they were on hospice or observation, expired prior to discharge, left AMA, or transferred to an acute/long term care facility.

Results: Data analysis included 1263 admissions with 348 meeting exclusion criteria. Of the patients evaluated, 96% were male with an average age of 70 years. A total of 204 all-cause 30 day readmissions occurred during the study period . The percentage of patients readmitted within 30 days post-discharge per CMS criteria at baseline, and following intervention one and two were 25%, 23%, and 20%, respectively. The 30 day mortality rate at the end of the study period was 7.16%. Percentage of patients scheduled for all four follow-up visits post-discharge at baseline and following intervention one and two were 1%, 12% and 28%, respectively. Of those with all four follow-up appointments scheduled, no patients attended all four visits at baseline and 9% and 30% of patients attended all four visits following intervention one and two, respectively.

Conclusion: Patients with heart failure are at increased risk for hospital readmission compared to the general population. This patient population uses a substantial amount of health care resources and new methods are needed to increase access to care while reducing costs. Utilizing a quick order set to ensure post-discharge appointments are scheduled prior to discharge plays a critical role in increasing attendance to follow-up care. Intensive follow-up with higher attendance rates post-discharge for heart failure patients is essential to improving 30 day readmission rates and mortality.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Evaluative Study

Session-Board Number: 1-358

Poster Title: Implementation and outcomes of opioid-related electronic consults (e-consults) by a clinical pharmacy specialist in a Veterans Affairs health care system

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Purpose: The focus of chronic pain management has shifted to decreasing, or avoiding, chronic opioids in non-cancer patients due to known risks and lack of benefit of long-term opioid use in most patients. Electronic consults (e-consults) provide an outlet for providers to obtain evidence-based recommendations for tapering and discontinuing opioids. A clinical pharmacy specialist (CPS) trained in pain management conducts a thorough patient history review and provides recommendations to requesting providers. This project was conducted to evaluate the percentage of implemented recommendations, complete or partial, and if morphine equivalents per day (MED) decreased with these recommendations.

Methods: This review was conducted with approval from the Institutional Review Board. Information was collected through a retrospective chart review of South Texas Veterans Health Care System (STVHCS) veterans. The initial study population included any patient with a note titled “PharmD Opioid E-consult Results Note” entered from February 2015 through June 2016. To be included in the analysis, e-consults must have been placed primarily for opioid recommendations and patients had to have documented follow-up and receive pain medications through STVHCS. For patients with repeat consults, the more recent recommendations were included, but total MED from initial consult through the present time were used for complete data analysis. Data collected included specialty of the providers who placed the consult, consult submission and completion dates, reason for the consult, a summary of the recommendation, and MED at baseline, 3, 6, and 9 months along with “current” MED at the time of data collection. Concomitant benzodiazepine use and naloxone kit recommendations with notation of subsequent provision to patients were also collected.

Recommendation implementation was categorized as complete (full taper to no or low MED as recommended in consult response), partial (MED reduction to intermediate dose), minimal, or none.

Results: A total of 105 consults were submitted for 99 unique patients during the review period, with the majority (90%) placed by primary care providers, most often requesting recommendations regarding opioid taper or discontinuation. Nine consults were excluded because the primary consult reason was not for opioid taper or discontinuation, leaving 96 consults for 91 unique patients. Seventy-seven unique patients were included in the analyses after excluding patients no longer receiving care at STVHCS, including one who had passed away and another who was active military, or not receiving pain medications at STVHCS. E-consults took an average of 1.7 days to complete and recommendations were completely and partially accepted in 51% (39/77) and 35% (27/77) of e-consults, respectively. Thirty-three patients had data through all analyzed time periods. Twelve percent of recommendations were not accepted at all. The greatest MED reduction was seen from baseline to 3 months (49%), with subsequent reductions of 0.1%, 4%, and 26% at 6 and 9 months and to current dose, respectively. Concomitant benzodiazepine use was documented in 14% of patients and naloxone kits were recommended in 16%, only one of which was received by the patient.

Conclusion: The CPS-managed opioid e-consult service positively impacts health care and patient safety by supporting evidence-based management, often with taper or discontinuation, of chronic opioid therapy, helping reduce opioid misuse and overdose. Healthcare providers, but particularly CPSs, can play a critical role in reducing misuse of opioid medications. The opioid e-consult service evaluated in this review presents a way to recommend safe, evidence-based schedules for tapering off of these medications. With the utilization of the e-consult service, majority of these cases can be handled within primary care, but they require a strong alliance between pharmacist, provider and patient to achieve success.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-359

Poster Title: Implementation of a standardized admission insulin order set in a veterans hospital

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Purpose: Hyperglycemia in hospitalized patients with or without diabetes mellitus is associated with greater adverse outcomes and increased lengths of stay. Current guidelines recommend basal-bolus correction insulin regimens for inpatient glycemic control, but consensus for optimal insulin protocol design remains unclear. At our institution, admission order sets with sliding scale insulin were previously used. Recent implementation of a basal-bolus insulin order set has yet to be evaluated for efficacy. The purpose of this study is to determine the efficacy of a newly implemented admission insulin order set for hyperglycemia management as compared to hyperglycemia management before implementation.

Methods: This is a retrospective, single-center, pre-post study conducted at the South Texas Veterans Health Care System. Patients will be included if admitted to a general medicine ward and have a diagnosis of type 2 diabetes mellitus or admission blood glucose greater than 180 mg/dL. Data will be collected from an electronic health record from August 1, 2015 to October 31, 2015 and August 1, 2016 to October 31, 2016 to evaluate data pre- and post-implementation of the admission insulin order set. From the collected data, demographic information, patient diagnoses, hospitalization course, discharge data, length of stay, and medication history will be evaluated. The primary endpoint of mean blood glucose levels (before and after order set implementation) throughout hospitalization will be compared. Secondary endpoints include: percent of patients with average hospitalization blood glucose less than 180 mg/dL, percent of patients utilizing basal insulin, percent of patients utilizing sliding scale only, 30-day mortality, length of stay, and occurrence of hypoglycemia episodes. This data will be used to determine whether implementation of the admission insulin order set is associated with improved inpatient glycemic control.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Evaluative Study

Session-Board Number: 1-360

Poster Title: Reducing concurrent prescribing of benzodiazepines and opioids

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Purpose: The concurrent use of opioids and benzodiazepines may put patients at greater risk for fatal overdose as both depress the central nervous system and can decrease respiratory drive. Due to an increased risk of falls, respiratory depression, overdose, cognitive problems and death in patients receiving benzodiazepines and opioids, concomitant use is not advised. In the 2014-2015 fiscal year, 6.3% of pharmacy patients were on combined opioid and benzodiazepine therapy in the South Texas Veteran's Health Care System. In line with current best practices, strategies are needed to reduce the rates of concurrent prescribing and improve patient care.

Methods: Patients who had an active prescription for a benzodiazepine and an active prescription for an opioid medication as of February 23, 2016 were included, unless the days supply of medication was less than 14 days or the quantity was less than the days supply (e.g. 15 tablets for 30 day supply). The electronic medical record was reviewed for each patient who met criteria for evaluation. Various patient factors and characteristics were extracted for analysis. An alert was completed by a mental health clinical pharmacy specialist (MH CPS) and sent to the prescribing physician. If medications were prescribed by more than one provider, both the prescriber of the opioid and the benzodiazepine were alerted. After ten days, the charts of patients whose prescriber had been alerted, were reviewed. Analysis includes percentage of responses received and medication changes.

Results: : A total of 83 patients were included in the final analysis. Characteristics associated with an increased risk of overdose including morphine equivalent dose ≥ 100 mg, obstructive sleep apnea, and post-traumatic stress disorder were present in 13.3% (11/83), 28.9% (24/83), and 28.9% (24/83) respectively. Provider response with within the ten day follow up period was 46.9% (39/83). Overall, 28.9% (24/83) of provider responses indicated that patients would

either be initiated or continued on a benzodiazepine taper. This number encompasses the 12% (10/83) of providers who initiated a benzodiazepine taper within the 10 day follow up period, 9.6% (8/83) of providers that indicated that they would discuss or implement a taper at the patient's next scheduled appointment, and 7.2% (6/83) of providers that agreed to continue a previously initiated a benzodiazepine taper. A portion of providers 7.2%, (6/83) opted to continue current therapy with caution. The MH CPS recommended a benzodiazepine taper in 68 patients, of which 26.5% (18/68) of providers either implemented or indicated they would consider a future change, 7.0% (6/68) providers indicated they would continue therapy with caution, and (44/68) providers did not respond within the 10 day follow up period.

Conclusion: The MH CPS led alert provided an effective means to reduce the amount of inappropriate prescribing of concurrent benzodiazepine and opioid therapy. This analysis was limited by the short follow-up period measured and the inability to capture non-VA prescriptions. Alternative strategies must be used to target providers who did not respond to the alert. Future efforts should be focused on preventing initiation of combination therapy when alternatives exist.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-361

Poster Title: Effects of tapering high-dose opioid therapy on health care utilization in Veterans on chronic opioid therapy

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Purpose: Chronic opioid use has a high prevalence within the Veterans Health Administration (VHA). It is well established that patients on high-dose opioids experience more overdoses, are more likely to have alcohol or drug-related healthcare encounters, and may experience opioid induced hyperalgesia. In June 2014 regional Academic Detailing Services with the Opioid Safety Workgroup began an educational campaign aimed at realigning opioid prescribing culture with the best evidence-based practices. This study's purpose is to evaluate the impact of an opioid safety initiative (OSI) on the health care utilization of veterans on high-dose opioid therapy within a veterans integrated services network (VISN).

Methods: This quality assurance project is a retrospective analysis of prescription and patient encounter data for the specified cohort for two distinct time periods from a VHA regional data warehouse. The patient cohort will be identified by filled prescriptions for chronic high-dose opioid analgesics (i.e. 90 milligram morphine equivalent dose (MED) daily or greater, receiving a 90 day's supply within 180 days) during fiscal year 2013. The OSI timeframe is defined as fiscal years 2014 and 2015 and follow-up analysis period is fiscal year 2016. Outcomes will be compared between the baseline data and the follow-up data for the identified cohort. Subject exclusion criteria includes: death during the baseline time period or OSI implementation period, although these numbers will be reported. Primary objective data includes: pain score, MED, prescription, and healthcare encounters. Additional demographic information will include: age, gender, concomitant benzodiazepine or sedative, and high risk comorbidities based on at least two encounter diagnoses within the baseline study period (i.e. post-traumatic stress disorder, major depressive disorder, substance use disorder, other mental health diagnosis, obstructive sleep apnea, and chronic obstructive pulmonary disease). The data query will be limited to VISN

sites with available data for the evaluation timeframes, and will be executed using Toad for Structured Query Language (SQL) Server Management software. Microsoft Excel and other appropriate software will be used for data organization and statistical analysis.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-362

Poster Title: Impact of clinical pharmacy case management on time to treatment for diagnosed Hepatitis C patients

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Purpose: Advances in Hepatitis C therapy with direct-acting antivirals (DAAs) afford a curative goal contingent upon timely and sustained access to care. The clinical pharmacy Hepatitis C clinic at the West Texas VA Health Care System (WTVAHCS) was developed to meet the needs of evolving practice to improve linkage to care. The purpose of this review is to evaluate the impact that the clinical pharmacy Hepatitis C clinic has had on time to treatment for WTVAHCS Hepatitis C patients and compare the rates of sustained virologic response (SVR) achieved between Hepatitis C case management modalities.

Methods: This quality improvement project was approved by the WTVAHCS pharmacy and therapeutics committee. Retrospective analysis will evaluate time from initial Hepatitis C consult to receipt of DAA therapy for WTVAHCS Hepatitis C patients. A Computerized Patient Record System (CPRS) medication record review will identify WTVAHCS Hepatitis C patients who received DAA from the onsite pharmacy. The timeframe evaluated for comparison will include two years prior to the opening of the Hepatitis C clinic (April 1, 2014 – April 1, 2016) through the opening of the Hepatitis C clinic (April 1, 2016 – July 31, 2016). Time to treatment achieved by the Hepatitis C clinic will be compared to that of prior case management modalities. Data collection for the primary analysis will include the date of Hepatitis C CPRS consult and the date of written prescription for Hepatitis C DAA. Secondary analysis will evaluate Hepatitis C viral load after 12 and/or 24 weeks of treatment, Hepatitis C genotype, reported adverse medication related effects and distance from patient's primary Community Based Outpatient Clinic (CBOC) location to the WTVAHCS site. Time to treatment will be

calculated based on the date of CPRS Hepatitis C consult entry and the date of the first Hepatitis C DAA prescription fill. SVR will be determined based on Hepatitis C viral load after prescribed duration of therapy (12 or 24 weeks).

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-363

Poster Title: Evaluating the change in unnecessary benzodiazepine use in veterans on both an opioid and benzodiazepine or a benzodiazepine alone after sending an educational self-taper letter

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Purpose: Concomitant opioid and benzodiazepine use have been associated with an increase in the risk of death and severe adverse events. The EMPOWER study has shown a decrease in benzodiazepine use when patients are mailed a letter containing information describing benzodiazepines and strategies for discontinuation. The primary objective of this quality improvement project is to evaluate the change in benzodiazepine use in veterans on both an opioid and benzodiazepine or a benzodiazepine alone after receiving an educational letter covering benzodiazepines. The secondary objectives are to determine the most commonly prescribed benzodiazepine, diazepam equivalents prescribed, and indication for use.

Methods: The Pharmacy and Therapeutics committee approved a retrospective review of patients on both opioids and benzodiazepines or benzodiazepines alone to determine if there was a change in benzodiazepine use after an educational letter containing information for benzodiazepines on self-tapering was sent. Data will be accessed through a structured query language (SQL) report for those patients who were sent the letter. The SQL report will access data on the last fill date of the benzodiazepine, the last day supply of benzodiazepine filled, the benzodiazepine prescribed, benzodiazepine dose, patient age, and indication for use. A benzodiazepine taper will be deemed complete if the benzodiazepine has not been filled within six months from the letter being sent. A decrease in benzodiazepine use will then be measured by the total number of patients on benzodiazepines before and after the letter as a percentage of the total population.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-364

Poster Title: Direct acting oral anticoagulants in patients of extreme weights

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Purpose: A 2016 ISTH/SCC guidance document recommends that direct acting oral anticoagulants (DOAC) not be used in patients with body mass indexes (BMI) greater than 40 or weight greater than 120 kilograms (kg). This recommendation is based on the lack of representation of these groups in clinical trials and based on pharmacokinetic data, suggesting decreased drug exposures, reduced peak concentrations and shorter half-lives in these groups. The objective of this study is to identify efficacy outcomes to further guide DOAC treatment decisions.

Methods: This retrospective study will identify all Veterans Affairs (VA) patients prescribed a DOAC with a BMI greater than 40 or weight greater than 120kg. The following data will be collected from the electronic medical record utilizing ICD9 codes: DOAC indication (non-valvular atrial fibrillation (NVAF) or venous thromboembolism (VTE) treatment), specific DOAC (rivaroxaban, dabigatran, apixaban, edoxaban), DOAC dose and frequency of administration, thrombotic history while on a DOAC, duration on a DOAC, renal function (serum creatinine, creatinine clearance, eGFR), and CHADS2-VASc score for NVAF patients. All data will be managed by a SQL database and collected without patient identifiers. Treatment failures, defined as a thrombotic event while receiving a DOAC, will be compared between patients of various BMI and weight categories.

Results: n/a

Conclusion: n/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-365

Poster Title: Medication use evaluation of intramuscular naltrexone for alcohol and opioid use disorder

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Purpose: This medication use evaluation aims to identify any deficiencies in patient follow-up for veterans prescribed intramuscular (IM) naltrexone with the goal of designing an intervention or protocol to improve compliance for follow-up injections.

Methods: Using the data warehouse, a list of all patients prescribed IM naltrexone between July 1, 2015 and July 1, 2016 will be collected. By way of chart review, when and why naltrexone was initiated and discontinued will be identified. In addition, demographics including age, sex, diagnoses, and start/stop dates will be collected. The number of hospitalizations related to disorders treated with naltrexone will also be collected. Cost analysis will be included as part of this project including potential cost savings through proposed interventions.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-366

Poster Title: Medication use evaluation of medication assisted treatment for alcohol use disorder

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Purpose: The purpose of this medication utilization evaluation (MUE) is to determine the number of patients who are potential candidates for medication assisted treatment (MAT) for alcohol use disorder (AUD), as well as examine their characteristics, including the number of recent alcohol-related admissions and where they are currently accessing care. This information will be used to better direct our efforts in prescribing MAT and connecting patients with AUD to appropriate care based on patient preference and clinical necessity.

Methods: This MUE will be conducted as a retrospective chart review of patients with documentation of AUD or alcohol dependence in the electronic medical record. Patients with International Code of Diseases, Ninth or Tenth revision (ICD-9 and ICD-10) codes for 303, alcohol dependence syndrome, or F10, alcohol related disorders, will be included in chart review. Data will be collected on patients who have not filled an outpatient prescription for naltrexone, acamprosate, or disulfiram between 09/01/2015 – 09/01/2016. The following data points will be collected: demographics, including age, sex and alcohol related diagnosis; primary care provider (PCP) information, including PCP name, clinic location and date of last visit with PCP; mental health (MH) provider information, including MH provider name, clinic location and date of last visit with MH provider; and hospitalizations and emergency department (ED) visits, including dates and admission diagnoses. The primary endpoint is the number of patients with documented alcohol dependence who are not prescribed MAT, with secondary endpoints including the number of alcohol-related admissions/ED visits in the past year, percentage of patients with a PCP or MH provider visit in the past year, percentage of patients without a MH provider and location of PCP. Descriptive statistics will be used to evaluate primary and secondary outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-367

Poster Title: Skin and soft tissue infection (SSTI) treatment evaluation at the Salt Lake VA Medical Center

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Purpose: Evaluations of SSTI treatment in other health systems have identified opportunities for reducing unnecessary antimicrobial exposure and diagnostic testing. The objective of this project is to evaluate the treatment of SSTIs at the Salt Lake VA Medical Center to identify opportunities for improvement of prescribing practices in the ambulatory care, inpatient and emergency department settings. The results of the evaluation will guide development of a facility-specific treatment pathway adapted from the Infectious Disease Society of America (IDSA) guideline for treatment of SSTIs.

Methods: Patients with SSTIs from January 1, 2015 through July 31, 2016 will be identified using relevant SSTI Internal Classification of Diseases codes. Approximately 200 patients will be selected for manual chart review. Criteria for exclusion are diabetic foot infections, post-operative infections, osteomyelitis, joint infections, orofacial infections, perianal infections and coexisting non-SSTI infections. The following data will be collected from the medical record: demographics, medication allergies, relevant comorbidities, vital signs, relevant laboratory values, type of imaging used, location of infection, classification of SSTI as purulent or nonpurulent, culture results, antibiotic(s), duration of treatment, SSTI retreatment, Clostridium difficile infections within 1 month post-treatment, hospitalization and length of stay. The primary treatment evaluation objective is to assess the proportion of veterans whose antibiotic regimen met criteria for potentially avoidable exposure. Potentially avoidable exposures will be defined as use of a broad spectrum antibiotic for any SSTI, use of an anti-MRSA antibiotic for nonpurulent SSTI, or treating any SSTI for greater than 7 days.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-368

Poster Title: Metformin use in patients with type 2 diabetes mellitus and renal dysfunction

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Dat Auduong
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Purpose: In April 2016, the U.S. Food and Drug Administration (FDA) revised their recommendation regarding use of metformin in individuals with renal dysfunction. This update was based on a review of evidence showing safety in patients with an eGFR as low as 30 mL/min, and recommended that eGFR, not SCr, be used as a measure of renal function. The objective of this analysis is to determine if there are patients within a regional healthcare system who were not previously started on metformin due to elevated SCr, but would now be eligible for this therapy based on eGFR.

Methods: The electronic medical record will be used to identify patients with a diagnosis of type 2 diabetes mellitus according to ICD-9 or ICD-10 code, and moderate renal dysfunction, defined as eGFR greater than 45 mL/min, who do not have an active prescription for metformin or a documented adverse reaction to this agent. Patients will be included if they are male with an average SCr greater than 1.5 mg/dL, or female with an average SCr greater than 1.4 mg/dL. These laboratory findings may have contributed to avoidance of metformin based on previous guidance concerning increased risk of lactic acidosis. The following data will be collected: age, average HgbA1c, most recent HgbA1c, measure of renal function using average and most recent SCr and eGFR values, and other anti-hyperglycemic prescriptions. All average values will be based on labs measured between April 2015 and April 2016. A protocol will be developed to initiate metformin therapy in collaboration with primary care providers in patients considered clinically appropriate for therapy. A cost-savings analysis will be completed to determine the potential financial benefit to the institution if patients were able to transition to metformin from an alternative agent.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-369

Poster Title: Medication utilization evaluation of lithium monitoring at the Veteran's Affairs Salt Lake City Health Care System (VASLCHCS)

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Purpose: Ensuring appropriate monitoring in veterans maintained on lithium is a national Veteran's Affairs (VA) initiative. Lithium has a narrow therapeutic index and small changes in serum levels can result in therapeutic inefficacy or toxicity. To monitor safety, the VA/Department of Defense (DOD) guidelines recommend to check lithium serum levels every 4-14 days following initiation, titration, or a change in risk factors, and every six months in stable patients on a maintenance dose. The objective of this study is to evaluate serum lithium level monitoring at the VASLCHCS and identify strategies to improve lithium safety.

Methods: This evaluation will be a quality improvement project at the VASLCHCS, and has been exempt from Institutional Review Board review. Retrospective, local data will be pulled and charts will be reviewed for patients on lithium between June 2015-June 2016. Veterans will be included in the review if they are older than 18 years, receive care at the VASLCHCS or surrounding community based outpatient clinics (CBOCs), and have an active prescription for a lithium product on local VA formulary. Only those who receive their primary mental health care or draw labs outside of the VASLCHCS will be excluded. The following data will be collected and maintained confidentially: age, sex, weight, lithium dose/formulation, date of last lithium serum lab, identification of mental health provider/lithium prescriber, concomitant medications, and the date of the most recent TSH, Scr, CrCl, CBC labs. Based on this local data review, the local rates of lithium serum monitoring will be evaluated and compared to the VA national averages using descriptive statistics. Additionally, patient factors and lab monitoring trends will be evaluated, to identify the patients who may be due for monitoring, and to highlight areas where local processes can be improved.

Results: n/a

Conclusion: n/a

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-370

Poster Title: Effect on prescribing patterns after implementation of a risk assessment tool in patients receiving co-prescribed benzodiazepines and opioids

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Purpose: The 2016 Centers for Disease Control and Prevention Guideline for Prescribing Opioids for Chronic Pain state that co-prescribing of opioids and benzodiazepines should be avoided whenever possible due to increased risk of morbidity and mortality. The purpose of this study is to determine if incorporating a risk assessment tool into provider's assessment of patients co-prescribed benzodiazepines and opioids affects prescribing patterns. The ultimate goal is to improve patient safety and prevent adverse events.

Methods:
This is a prospective cohort study involving veterans currently co-prescribed long-term benzodiazepine and opioid therapy. It will be submitted to the Institutional Review Board for approval. All patients co-prescribed long-term benzodiazepine and opioid therapy will be identified using the outpatient pharmacy medication record. Using the patient's electronic medical record, the following baseline data will be collected: patient age, gender, race/ethnicity, opioid prescribed and dose, benzodiazepine prescribed and dose, diagnosis for opioid and benzodiazepine use, if a naloxone kit has been prescribed, if urine drug testing is utilized, and whether or not the patient has a history of substance abuse. After receiving education on the risk assessment tool through the Veterans Affairs Academic Detailing Service, it will be distributed to the prescriber of the benzodiazepine. Prescribers will incorporate the risk assessment tool into follow-up appointments and document their assessment and plan in the patient's medical record. After 6 months of tool implementation, data will be collected to determine the effects of the risk assessment tool. Primary outcomes include: change in number

of patients co-prescribed benzodiazepines and opioids and the change in daily dose of benzodiazepine and/or opioid.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 1-371

Poster Title: Impact of Pharmacist Administered Discharge Counseling on Veteran Transitions from a Long-Term Care Facility (Project IMPACT)

Primary Author: Allison French, Salem VA Medical Center, VA; **Email:** frenchak@vcu.edu

Additional Author (s):
Rita Spencer

Purpose: Pharmacist interventions at hospital discharge have been associated with a decrease in preventable adverse drug events and hospital readmissions. The benefit of pharmacist involvement in the discharge process from long-term care facilities has not yet been determined. The purpose of this study is to evaluate the effect of pharmacist-led discharge medication counseling on 60-day unplanned hospital readmission rates of Veterans following discharge from a long-term care facility.

Methods: This study is designed as a retrospective matched cohort analysis using electronic chart review. Data will be extracted from the Computerized Patient Records System (CPRS) of patients discharged from a long-term care facility post-rehab/skilled care from 8/1/2013 to 8/1/2014. Data will also be extracted for patients discharged post-rehab/skilled care from 8/1/2015 to 8/1/2016 who received a pharmacist-led discharge medication counseling service. Adults (18 years or older) discharged from either skilled care or rehab treatment specialties will be included in the study. Exclusion criteria include patients with a length of stay greater than 90 days and those discharged to a long-term care facility, hospital, or emergency department. Patients designated as palliative/hospice, respite, or long-stay continuous care will also be excluded. The primary outcome is 60-day unplanned hospital readmission rates. The primary outcome will be determined based on records review and presence or absence of acute admission as a result of emergency department visit without scheduled appointment for admission. Secondary outcomes will include number of medication changes upon discharge and occurrence of successful primary care follow-up following discharge. Successful primary care follow-up includes patients reached by primary care or patients who contacted primary care within the first month of discharge.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-372

Poster Title: Impact of a clinical pharmacist in the management of drug-drug interactions in HIV infected veterans

Primary Author: Leslie Perry, Salem VA Medical Center, VA; **Email:** lesliemwalters@gmail.com

Additional Author (s):
Katherine Jamison

Purpose: ASHP released guidelines in April 2016 advocating the involvement of pharmacists in HIV care. This study will evaluate the additional value of a Clinical Pharmacy Specialist (CPS) as part of an interdisciplinary care team in an outpatient Immunodeficiency Clinic at the Salem VA Medical Center (SVAMC) with regard to the treatment of HIV as measured by the change in the number of drug-drug interactions before and after CPS involvement, in addition to changes in viral load, CD4 cell absolute count and percentage, Hemoglobin A1c, low density lipoprotein levels, medication interventions, and number of patients on a one-pill-per-day regimen.

Methods: This study has been submitted to the Institutional Review Board for approval. The Clinical Case Registry and Computerized Patient Record System will identify patients seen by any infectious disease provider or trainee at the SVAMC between 1/1/1992 and 11/30/2011 as well as between 1/1/2012 and 10/1/2016, the dates marking introduction of a CPS or pharmacy trainee, precepted by a CPS, as part of standardized HIV care. Data analysis will include medications prescribed, progress notes, vaccination history, labs, and demographics. Patient identifiers will be removed and codes maintained in a password-protected spreadsheet with access limited to study personnel. Drug interactions will be classified by severity using the University of Liverpool's Drug Interaction Checker (www.hiv-druginteractions.com). Only de-identified information will be put into the online drug interaction checker. CPS interventions that will be analyzed include concomitant medications, including dose changes, administration time changes, medication changes, recommendations, and vaccinations.

Results: To be determined

Conclusion: To be determined.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-373

Poster Title: Use of U-500 Insulin in Veterans with Type 2 Diabetes

Primary Author: Jenna St. Pierre, Salem Veterans Affairs Medical Center, VA; **Email:** jenna.st.pierre@va.gov

Additional Author (s):
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James Bozard

Purpose: Many patients with type 2 diabetes mellitus (T2DM) require high doses of insulin that may be problematic to administer via traditional insulin formulations. To meet these high dose requirements with traditional insulin preparations requires a large injection volume multiple injections per day or both; this can potentially lead to patient discomfort, decreased adherence, unpredictable insulin absorption and leakage. U-500 insulin is five times more concentrated than traditional insulin and as such may alleviate some of these administration issues. The objective of this study is to evaluate the use of U-500 insulin at our institution for efficacy, safety and cost effectiveness.

Methods: This study will be performed as a retrospective chart review. Data will be pulled from our institution's data warehouse and electronic medical record system for patients with an active prescription for U-500 insulin over the last 24 months. For inclusion in the study, patients must have at least one A1C documented prior to the initiation of U-500 and at least one additional A1C documented afterwards. Patients with a lack of follow-up after initiation of U-500 and patients with Type 1 Diabetes will be excluded. Baseline characteristics will be gathered on all patients examined by the study in order to create an accurate clinical picture of each patient; this will include patient age, sex, ethnicity, weight, years with T2DM, and lipid profile. The primary outcome of this study is A1C reduction. Secondary outcomes will include change in body weight, change in total insulin dose, number of injections per day, and incidences of hypoglycemia that require emergency medical services. Additionally, we will compare the costs of utilizing U-500 to that of traditional U-100 insulin once data has been collected. Cost analysis will evaluate not only the acquisition cost of the insulin products, but also the costs of associated injection supplies based on the number of injections per day as well as the costs associated with emergency department utilization.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-374

Poster Title: Assessing the sustained virologic response at 12 weeks (SVR12) for different treatment durations using sofosbuvir/ledipasvir for chronic hepatitis C in an African American Veteran population

Primary Author: Chelsie Morrison, DC Veterans Affairs Medical Center, WA; **Email:** chelsie.morrison@va.gov

Additional Author (s):
Ivan Cephas

Purpose: Hepatitis C treatment response is defined by sustained virological response (SVR) frequently indicated by an undetectable HCV RNA 12 weeks after the end of treatment (SVR12). Traditionally, genotype 1 has been harder to treat and the treatment duration efficacy between 8 vs. 12 weeks to achieve SVR12 is often conflicting. Although, African Americans have an increased risk of hepatitis C prevalence they are underrepresented in hepatitis C clinical trials. The aim of this retrospective study is to compare the SVR rate for 8 vs. 12 week use of ledipasvir/sofosbuvir in an African American compared to a non-African American Veteran Population.

Methods: This is a retrospective cohort study, that will be submitted under the Institutional Review Board approved DC VAMC hepatitis C protocol. We will evaluate the outpatient prescription data for sofosbuvir and ledipasvir from the Veterans Health Information Systems and Technology Architecture (VistA). Additional outcomes will be evaluated utilizing Computerized Patient Record System (CPRS). All HCV-positive patients who have been treated with the combination Sofosbuvir and Ledipasvir at the Veteran Affairs Medical Center in Washington DC from November 2013 to July 2016 will be included. The clinical data for each patient will be abstracted and maintained in a password encrypted Excel spreadsheet, no patient identifiers will be used. Upon receipt of the patient information list, patients will be randomized using a list randomizer, then de-identified, and maintained confidentially. Subjects will be divided into two groups African Americans and Non-African Americans, all of which will be taking the combination Sofosbuvir and Ledipasvir, but may have different treatment durations. The following data will be collected: patient age, gender, ethnicity, prescription history for sofosbuvir and ledipasvir, SVR, viral load, substance abuse, use of mental health

provider, and substance abuse recovery program (SARP) enrollment. Refill history of sofosbuvir and ledipasvir will be recorded and analyzed for adherence. The SVR rate will be assessed 12 weeks after treatment for both the 8 and 12 week treatment groups.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 1-375

Poster Title: Pharmacy-led implementation of angiotensin-converting enzyme inhibitor or angiotensin receptor blocker therapy in Veterans at high risk of kidney disease progression identified through a diabetes registry

Primary Author: Julia DiNardo, VA Puget Sound Health Care System, WA; **Email:** julia.dinardo@va.gov

Additional Author (s):
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Purpose: This project aims to assess, and implement a process to improve, our institution's adherence to local and national guidelines regarding the use of angiotensin-converting enzyme inhibitors and angiotensin receptor blockers in patients with diabetes, hypertension, and albuminuria. Secondarily, this project will evaluate whether pharmacist intervention is successful at initiating therapy and following outcomes compared to primarily physician-led management of therapy, which is current standard of practice. Results will also be used to determine whether implementation of a renal disease registry would be beneficial to capture a wider scope of patients in need of similar intervention.

Methods: Patients will be identified through the Veterans Affairs Diabetes Registry beginning October 2016. Inclusion criteria will entail enrollment in a primary care clinic at our institution, uncontrolled blood pressure of greater than 140/90 mmHg, history of macro/microalbuminuria greater than 30 mg/dL, and no current prescription for an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker within the Veterans Affairs Healthcare system. Patients enrolled in a similar, physician-led investigation at a separate division of our institution will be excluded. After identification, a pharmacist will conduct a chart review to determine clinical appropriateness of initiating an angiotensin-converting enzyme inhibitor or angiotensin receptor blocker based on history and physical data. If a patient is deemed a candidate, he or she will be enrolled in his or her respective Patient Aligned Care Team pharmacist's clinic for follow-up and management. The pharmacist will order any necessary baseline labs at that time for proper monitoring in order to facilitate patient care. Investigators will measure, as markers of success, number of patients enrolled in a Patient Aligned Care Team pharmacist's clinic,

number of prescriptions for angiotensin-converting enzyme inhibitors or angiotensin receptor blockers generated, laboratory tests ordered, number of clinic visits, and rate of therapy continuation and discontinuation. Therapy outcomes measured will include change in blood pressure and microalbumin excretion ratios. This project has been submitted to the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 1-376

Poster Title: Pharmacist led management of immunizations in post-hematopoietic stem cell transplant patients within the VA Puget Sound Health Care System (VAPSHCS)

Primary Author: Czarina Franco, VA Puget Sound Health Care System, WA; **Email:** cz.franco@gmail.com

Additional Author (s):
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Purpose: Hematopoietic stem cell transplantation (HSCT) recipients are at risk of vaccine-preventable diseases secondary to immunosuppression involved in transplantation. To prevent these diseases, immunizations are given at specific time intervals following transplantation. Currently, Marrow Transplant Unit (MTU) pharmacists are not utilizing their designated scope of practice, which grants them the authority to order and administer vaccines as necessary. The purpose of this project is to implement a pharmacist-led process for administering post-HSCT vaccinations at this institution. If this newly developed process leads to a more systematic process and increased protocol adherence, then it may be adopted.

Methods: The primary objective of this project is to develop pharmacist led processes and procedures for the management of immunizations in post-HSCT patients within this institution. This project will be submitted to the Institutional Review Board. The results of this project are intended to be used for quality improvement purposes at this institution only. All protected health information will be kept confidential. This institution utilizes the Seattle Cancer Care Alliance (SCCA) treatment and study protocols and follows their post-HSCT vaccination schema, which is based on the Center for International Blood and Marrow Transplant Research guidelines. An immunization order set that reflects this schema exists within the Computerized Patient Record System (CPRS). Using this order set, MTU pharmacists will perform chart reviews to determine when local HSCT patients are to receive immunizations, and will facilitate the ordering and administration of vaccines. Prior to implementation, specific details will be addressed, including criteria for when to give vaccines, procedures for ordering and administrating vaccines, protocol for checking titers after administration, staff and patient education, and proper documentation. Chart review will be performed prior to initiation to determine patients' baseline adherence to current vaccination schema, and again after three

months to determine if protocol adherence increases. If successful, the pharmacist led program will be adopted at this institution.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 1-377

Poster Title: Implementation of an interprofessional polypharmacy consult service for medication deprescribing

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Additional Author (s):
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Purpose: The purpose of this project is to introduce an interprofessional polypharmacy consult service to the primary care team, with the goal of deprescribing unnecessary medications, improving medication adherence, and simplifying complex medication regimens in older adults.

Methods: Nurse practitioner residents practicing in primary care will identify patients over the age of sixty-five years who are taking greater than five medications and may benefit from medication deprescribing. Baseline patient characteristics will be collected, including age, gender, comorbidities, and number of medications. The nurse practitioner will refer the identified patients to the pharmacist for polypharmacy review. The pharmacist will perform a chart review and in-depth information gathering through an interview with the patient to identify potentially inappropriate medication use. During the pharmacist interview, patients will be asked about adherence, medication side effects, and perception of their general health. The pharmacist will then compile a written recommendation to the nurse practitioner resident who referred the patient. The type and number of medication intervention recommendations made by the pharmacist will be assessed. Potential pharmacist interventions include deprescribing, dosage changes, and reduction in medication administration times per day. Additional information will be collected, including health care provider workload, class of medications deprescribed, and number of interventions accepted by the provider.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 1-378

Poster Title: Evaluation of phenobarbital as an adjunct to benzodiazepines for the treatment of severe alcohol withdrawal syndrome at a Veterans Affairs Medical Center

Primary Author: Heather Hresko, VA Puget Sound Health Care System, WA; **Email:** hhresko@gmail.com

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Purpose: Alcohol withdrawal syndrome (AWS) involves down-regulation of inhibitory GABA-A receptors and up-regulation of excitatory glutamate receptors in the brain. Benzodiazepines, the mainstay of treatment, suppress withdrawal symptoms by increasing the frequency of chloride channel openings at GABA-A. In contrast, phenobarbital reduces glutaminergic activity and enhances GABA-A effects by prolonging the open-channel state. This dual mechanism theoretically makes phenobarbital an ideal agent for synergistic use with benzodiazepines. Recent literature suggests benefits of phenobarbital for benzodiazepine resistant patients. This evaluation will assess phenobarbital use practices and examine the future role of phenobarbital in AWS at the VA Puget Sound Health Care System.

Methods: This study was submitted to the local Institutional Review Board for evaluation. Upon approval, a retrospective chart review of the VA Puget Sound Computerized Patient Record System (CPRS) will be conducted to identify all patients who received oral or intravenous phenobarbital from January 1, 2013 to October 1, 2016. Patients who received phenobarbital for indications other than AWS will be excluded. The following data will be collected: blood alcohol level on admission, phenobarbital prescribing pattern (dose, route, and frequency), benzodiazepine dose pre- and post-phenobarbital administration, Clinical Institute Withdrawal Assessment score, time to AWS resolution, length of hospital stay, use of escalation therapy (lorazepam, propofol, or dexmedetomidine continuous infusions), occurrence of seizures, respiratory depression (respiratory rate less than 12 breaths per minute), hypotension (blood pressure less than 90/60 mmHg), and use of mechanical ventilation. These data will be analyzed to determine the need for a systematic, standardized approach to phenobarbital administration for severe alcohol withdrawal at the VA Puget Sound. Subsequent policy development may

include criteria for phenobarbital use, identification of benzodiazepine-resistant AWS, standardization of phenobarbital dosing based on current literature, and development of an order set for CPRS.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 1-379

Poster Title: Effect of adjunct subcutaneous insulin aspart on hyperglycemic control and variability in post-cardiothoracic surgery patients on an insulin infusion

Primary Author: Jenny Luu, VA Puget Sound Health Care System, WA; **Email:** jennybnluu@gmail.com

Additional Author (s):
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Anne Baciewicz
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Purpose: In cardiothoracic surgery (CTS) patients, post-operative hyperglycemia and glycemic variability is associated with increased morbidity and mortality. Until now, the Veterans Affairs Puget Sound Health Care System (VAPSHCS), has utilized a consolidated insulin infusion protocol (IIP) to manage all post-operative patients with solely an insulin infusion. Recently, VAPSHCS created an IIP specific to CTS patients which includes subcutaneous insulin aspart meal coverage for patients on an oral diet, in addition to an insulin infusion. This project will evaluate whether this new regimen maintains euglycemia and reduces blood glucose fluctuations in comparison to using an insulin infusion alone.

Methods: This study was submitted to the local Institutional Review Board for review. Electronic medical records will be queried for post-cardiac surgery patients who resumed an oral diet and were initiated on an IIP within 48 hours from date of cardiac surgery at the VAPSHC Seattle Division. Two study populations will be investigated. The first population will be selected from a retrospective chart review between January 1, 2016 to September 30, 2016. The second study group will be selected by chart review after implementation of the CTS IIP between October 1, 2016 to April 30, 2017. Patients 18 years of age and older will be included if they had documentation of cardiothoracic surgery and subsequent postoperative hyperglycemia managed by either the consolidated or CTS IIP, and resumed an oral diet within the first 48 hours of surgery. Patients will be excluded if they were less than 18 years of age, did not undergo cardiac surgery, were NPO, or were intubated during the first 48 hours post-surgery. Medical records will be reviewed in order to collect data on demographic, laboratory,

and clinical variables. Clinical variables will include factors that increase risk of hyperglycemia such as weight, body mass index, diabetes history, and other comorbidities. Data prior to and after the implementation of the new CTS IIP will be evaluated and compared to the consolidated IIP.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 1-380

Poster Title: Implementation of a pharmacist led transitions of care program in the VA Puget Sound's emergency department

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Purpose: Transitions of care (TOC) services such as medication management and education provided by pharmacists has proven beneficial both in the inpatient and outpatient settings. However, this has not been extensively studied in our emergency department (ED) which has grown in size and volume over the recent years. This study aims to evaluate whether TOC services such as comprehensive medication reconciliation, discharge counseling, 3-day patient follow-up phone calls and referrals to primary care pharmacists are associated with lower 30-day readmission rates, reduction in barriers of access to care for veterans, and increases in primary care pharmacist utilization.

Methods: This prospective analysis will evaluate adult patients presenting to the ED from January 1, 2017 to May 1, 2017. The primary objective of this study is to assess whether comprehensive medication reconciliation, discharge counseling, 3-day patient follow-up phone calls and referrals to primary care pharmacists is associated with a lower 30-day readmission rate. All subjects included in the study must be non-pregnant adults who have a preexisting diagnosis of congestive heart failure (CHF), chronic obstructive pulmonary disorder (COPD) or asthma and on a complex medication regimen defined as 6 or more scheduled drugs. All subjects with no prior diagnosis of CHF, COPD or asthma, admitted to inpatient setting, have significant communication barrier or lack of translator will be excluded. After the appropriate subjects are identified and services are provided, documentation will be done by completing a TOC note in the computer system highlighting the pharmacist and patient interaction. The primary care and specialty clinicians and pharmacists will be electronically alerted to the note. Results will be collected and analyzed in Microsoft® Office Excel. The outcome data will be analyzed against the historical 30-day readmission rates. Additionally, the use and intervention

data will be compared to historical data to assess the utility and cost effectiveness of the process.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-381

Poster Title: Retrospective analysis of antimicrobial utilization in patients admitted with a beta-lactam allergy to determine candidacy for penicillin skin testing

Primary Author: Jennesa Sokol, VA Puget Sound Health Care System, WA; **Email:** jennesasokol@gmail.com

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Purpose: Currently, up to 10 percent of patients have a reported penicillin or beta-lactam allergy. Self-reported allergies are often not immune-mediated reactions and up to 80 percent of patients with true penicillin allergies lose sensitivity after 10 years. Beta-lactam allergies can cause deviations from standard of care treatments. A commercially available penicillin skin test (Pre-Pen) is a safe and effective method used to identify a true penicillin allergy. The objective of this study is to analyze current antimicrobial utilization in this institution's patients with beta-lactam allergies and to identify candidates for a penicillin skin testing clinic.

Methods: This quality assurance/quality improvement project will be conducted through an electronic medical record chart review. The review will include patients admitted between September 26, 2015 to May 13, 2016 with a listed beta-lactam allergy that received either a fluoroquinolone or vancomycin. Selection of fluoroquinolone and vancomycin use was chosen to concentrate the data on the more frequently prescribed beta-lactam alternatives. The following data will be collected: medication allergy listed, type of reaction, number of hospital admissions with antibiotics administered, antibiotics used, prior beta-lactam use, type of infection treated, culture and sensitivity of isolated organism if available, comorbidities and 30 day readmission/reinfection rate. The results of this study will determine the potential benefit and identify patients for a pharmacist managed penicillin skin testing clinic. A penicillin skin testing clinic could reduce the use of costly and potentially clinically inappropriate antibiotics, and aid in achieving this institution's antimicrobial stewardship goals.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-382

Poster Title: Panel management to identify veterans who will benefit from opioid overdose education and naloxone distribution by pharmacists in the primary care clinic

Primary Author: Cassandra Song, VA Puget Sound Health Care System, WA; **Email:** cassandra.song@va.gov

Additional Author (s):
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Purpose: Veterans are twice as likely to die from accidental opioid overdose compared to the non-veteran population. Though naloxone is readily available at VA Puget Sound Health Care System, a large number of high risk veterans have not yet received naloxone kits or naloxone education. The purpose of this project is to utilize panel management in a targeted approach to identify veterans who will benefit from a naloxone kit and education. This study will determine the effectiveness of this pharmacist led initiative to disseminate naloxone kits and education, as well as evaluate veteran specific perceptions about opioid reversal.

Methods: Pharmacists, pharmacy residents, and participating primary care providers will conduct panel management in order to identify veterans at high risk for opioid overdose. Through this targeted approach, the pharmacist and primary care provider will identify veterans on greater than fifty morphine equivalent daily dose (MEDD), on concomitant opioid and benzodiazepine therapy, or classified as a Risk Index for Overdose or Serious Opioid-Induced Respiratory Depression (RIOSORD) risk class of greater than eight. Veteran information including demographics, medication information, history of mental health disorders, history of emergency room visits, and comorbidities will be collected through chart review of the electronic health record system. Identified veterans will then be contacted by a pharmacist who will schedule agreeable veterans to an in-clinic visit for comprehensive naloxone and opioid overdose education as well as naloxone dispensing. After the clinic visit, the veteran will be asked to fill out a questionnaire regarding their perceptions about opioid reversal after receiving education. The primary outcome of this study is the number of veterans reached, educated, and dispensed naloxone as a result of this pharmacist led initiative. Additionally, the responses of patient questionnaires will be evaluated to determine the ability of the pharmacist to effectively educate veterans and disseminate unbiased information about naloxone.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-383

Poster Title: Implementation of antifactor-Xa (anti-Xa) monitoring for weight based heparin protocols

Primary Author: Adam McCarthy, Clement J Zablocki VA Medical Center, WI; **Email:** adam.mccarthy@va.gov

Additional Author (s):
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William Blaser

Purpose: American College of Chest Physicians recommends activated partial thromboplastin time (aPTT) or anti-Xa level for monitoring unfractionated heparin (UFH). Data suggests aPTT monitoring varies depending on reagent used and patient-specific factors, thus making anti-Xa level monitoring more advantageous in certain patients. Compared to anti-Xa monitoring, aPTT monitoring takes longer to reach therapeutic range, requires more lab draws, and results in less time in therapeutic range. The objective is to identify patients who may benefit from for anti-Xa level monitoring, and develop an anti-Xa monitoring protocol.

Methods: This is a single-center, retrospective chart review and quality improvement project that is exempt from the Institutional Review Board. Patients treated with high-intensity heparin protocol between August 31st, 2014 to August 31st, 2016 will be randomly selected until at least one hundred patients are identified. Using an electronic medical record the following data will be collected: weight, age, baseline aPTT, number of aPTT draws before reaching a therapeutic aPTT, baseline platelet count, baseline INR, indication for heparin and therapeutic heparin infusion rate. Outcomes: Data will be analyzed for the percentage of patients with a baseline aPTT greater than 40 seconds, percentage of patients that required three or more aPTT draws to reach a therapeutic aPTT and percentage of patients that require a heparin dose of 25 units/kg/hr or greater.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 1-384

Poster Title: Implementation of a pharmacy service for assessing and managing patients on concomitant opioids and benzodiazepines

Primary Author: Erin McAllister, Clement J. Zablocki VA, WI; **Email:** erin.e.mcallister@gmail.com

Additional Author (s):

Purpose: In August 2016, the FDA added a black box warning to the prescription labeling of both opioid and benzodiazepine medications, advising against the use of these medications in combination due to increased risk for additive adverse effects, accidents, falls, and cumulative respiratory depression that may result in unintentional overdose or death. The purpose of this project is to reduce the number of patients prescribed concomitant opioid and benzodiazepine therapy by implementing a pharmacy service to assist primary care providers with the assessment and management of patients on this regimen.

Methods: Baseline data will be collected for patients taking concomitant opioids and benzodiazepines who are seen in one of the primary care clinics at the Clement J. Zablocki VA Medical Center in Milwaukee, WI. Patients who are taking opioids for palliative care and cancer-related pain will be excluded from this study. The pharmacist will review the patient's medical record and the state prescription drug monitoring program and document relevant findings. Documentation will include prescribers, indications, daily doses, date and results of most recent urine drug screens, and patient-specific contraindications for both opioids and benzodiazepines. Recommendations will be made in the electronic health record regarding opioid and/or benzodiazepine taper plans per guidelines, alternative therapies for analgesia, anxiety, or insomnia, prescriptions for naloxone kits, and urine drug screens.
Data will be analyzed before and after pharmacist intervention. The primary outcome is the reduction in the number of patients who are prescribed concomitant opioid and benzodiazepine therapy. Additional measures include the percent of patients with a prescription for a naloxone kit, the percent of patients with a urine drug screen in the past year, the average daily doses of benzodiazepines and opioids, and the number of patients with relative or absolute contraindications to benzodiazepines or opioid medications.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 1-385

Poster Title: Dose-dependent differences in safety and efficacy of quetiapine for improvement of intensive care unit (ICU) delirium

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Additional Author (s):
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Carrie Lewandowski
Andreea Anton
William Blaser

Purpose: Delirium in ICU patients is associated with poor outcomes. Current guidelines for the management of pain, agitation, and delirium emphasize limited evidence for the use of atypical antipsychotics in these patients. Despite lack of evidence, use of quetiapine for treatment of delirium has become a common practice. The goals are to assess current trends of quetiapine utilization for the treatment of ICU delirium, including dosing, efficacy, and length of stay and to provide a quetiapine dosing recommendation in order to standardize prescribing practices for ICU delirium.

Methods: A retrospective analysis of quetiapine use for ICU delirium will be performed. Utilizing data from July 1, 2014 to June 30, 2016, patients who were prescribed at least one dose of quetiapine for delirium will be included in the analysis. Exclusion criteria include patients with an active outpatient quetiapine prescription at the time of admission. Confusion Assessment Method for the ICU (CAM-ICU) scores will be assessed to confirm the diagnosis of delirium. The length of time from delirium diagnosis to first dose of quetiapine (less than or greater than 24 hours) and appropriate discontinuation will be recorded to assess current prescribing practices of quetiapine. The efficacy of quetiapine dosing will be determined by analyzing the time to resolution (in days) of delirium based on improvement of CAM-ICU scores. The safety will be assessed by recording QTc (if available) and reviewing the chart for possible adverse effects. Quetiapine dosing will be measured as a total daily dose divided into three groups: less than or equal to 25mg, 26 to 50mg, or greater than 50mg. Using this data, a

quetiapine dosing recommendation will be made to assist ICU providers with safe and effective prescribing practices in the event of ICU delirium.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-386

Poster Title: Evaluation of prescribing direct oral anticoagulants (DOACs) in the setting of new onset venous thromboembolism (VTE): Increasing provider education and use of direct oral anticoagulants

Primary Author: Erin Kohl, Clement J. Zablocki Veteran Affairs Medical Center, WI; **Email:** Erin.kohl@va.gov

Additional Author (s):
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Angela Green
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April Rogers

Purpose: New onset venous thromboembolism (VTE) treated with warfarin for at least three months requires a significant amount of time and resources for both inpatient and outpatient management. Inpatient length of stay, bridging requirements, frequent outpatient lab draws and follow-up appointments all affect patient and provider satisfaction. A 2016 update to the CHEST guidelines suggests direct oral anticoagulants (DOACs) over warfarin for treatment of VTE for non-cancer patients based on similar efficacy, less bleeding, and greater convenience for patients and health care providers. Utilizing DOACs instead of warfarin may reduce burden on providers, pharmacists, and patients.

Methods: A retrospective chart review will be conducted to determine the percentage of patients with new onset VTE who qualified for a DOAC that were actually treated with a DOAC (versus warfarin and/or low molecular weight heparin). Patients deemed appropriate for a DOAC include those who do not have any the following: a documented adverse drug reaction to the DOAC in consideration, active cancer, history of non-compliance, concurrent indication for mechanical valve replacement, estimated creatinine clearance less than 30ml/min or on dialysis. This project will include all patients in 2015 that were evaluated in the emergency department or admitted to the medicine floor with a diagnosis of new deep vein thrombosis and/or pulmonary embolism; outcomes during their first three months of anticoagulation will be reviewed. The project will implement a “DOAC friendly” decision tree for VTE treatment on the medical center’s computerized order set to help guide providers in the appropriate choice

of anticoagulant. Additionally, education will be provided to prescribing providers and pharmacists on the clinical significance and logistics of the decision tree. The primary outcome is to determine the percentage of appropriate DOACs prescribed for new onset VTE. Secondary outcomes include hospital length of stay, length of bridging, number of outpatient lab draws, length of time of follow-up appointments with the pharmacist, and medication cost.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-387

Poster Title: Appropriateness and improvement of pharmacologic venous thromboembolism prophylaxis in medically-ill hospitalized veteran patients

Primary Author: Heather Powell, Clement J. Zablocki Veterans Affairs Medical Center, WI; **Email:** heather.powell3@va.gov

Additional Author (s):
Jennifer Koch

Purpose: The Clement J. Zablocki Veterans Affairs Medical Center currently does not require providers to assess venous thromboembolism (VTE) risk using a risk assessment model (RAM) when medically-ill patients are admitted to the inpatient hospital, although external links to such tools are available. The objective of this project is to assess the appropriateness of current pharmacologic VTE prophylaxis prescribing and improve utilization of best-practice VTE RAMs in medically-ill hospitalized patients admitted to the general medicine and hospitalist services through anticoagulation order set improvement.

Methods: This quality assurance project will utilize an electronic medical record to identify inpatient medically-ill veterans admitted to the general medicine and hospitalist services between September 1 and September 30, 2016 for an initial assessment of appropriate pharmacologic VTE prophylaxis prescribing practices and December 1 through December 31, 2016 for appropriateness assessment following implementation of an updated anticoagulation order set. Appropriateness of pharmacologic VTE prophylaxis prescribing practices will be assessed using the Padua Prediction score with inappropriate prescribing categorized into one of two categories: 1) Does not meet risk criteria to qualify for VTE prophylaxis or has contraindication to anticoagulation although prophylaxis is prescribed; or 2) Meets risk criteria to qualify for VTE prophylaxis although prophylaxis is not currently prescribed. The updated anticoagulation order set will require calculation of a Padua Prediction score greater than or equal to 4 (high risk) prior to allowing the physician to proceed to the pharmacologic VTE prophylaxis ordering menu. The investigators will analyze data for a difference in appropriate pharmacologic VTE prescribing practices between the two review periods.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-388

Poster Title: Implementation of an extended-infusion beta-lactam automatic interchange procedure and evaluation of related clinical outcomes

Primary Author: Jeremiah Barnes, Clement J. Zablocki Veterans Affairs Medical Center, WI; **Email:** jeremiah.barnes@va.gov

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Purpose: Current literature supports the use of extended-infusion beta-lactam antibiotics over short-infusion. The amount of time which the free drug concentration exceeds the minimum inhibitory concentration (MIC) of the pathogen is the best predictor of bactericidal activity for beta-lactams. This pharmacokinetic principle is supported by patient outcomes data from large clinical trials demonstrating improvements in mortality, survival, length of stay, and treatment success favoring extended-infusions over intermittent dosing. The purpose of this project is to implement an extended-infusion beta-lactam ordering menu and automatic interchange procedure, provide administration guidelines at a medical center level, and assess the potential impact on patient outcomes.

Methods: This study is a retrospective, electronic chart review comparing efficacy outcomes of extended-infusion and short-infusion beta-lactams from July 1, 2016 to January 1, 2017. The primary efficacy outcomes analyzed in this study are intensive care unit (ICU) and total hospital length of stay. Secondary outcomes include: time to de-escalation of antibiotics, treatment success rate, medication error rate, and cost of antibiotic therapy. Provider documentation in electronic health records, available microbiological cultures, electronic reports of patient's time to floor transfer or discharge, data from error reporting software, and real time medical center cost data will be collected for the evaluation of these primary and secondary outcomes. This project will assess the implementation of the following antibiotics as extended infusions: piperacillin/tazobactam, cefepime, and meropenem.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-389

Poster Title: Assessment and removal of inappropriately documented penicillin allergies at a Veterans Affairs medical center

Primary Author: Clayton Patros, Clement J. Zablocki Veterans Affairs Medical Center, WI; **Email:** clayton.patros@va.gov

Additional Author (s):
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Asriani Chiu Chiu
Sheran Mahatme

Purpose: Beta-lactam antibiotics are commonly associated with immediate hypersensitivity reactions. On average, 10 percent of the general population have a reported history of a penicillin allergy, yet only 10 percent of those individuals are estimated to be truly allergic. Assessing these patients' allergies is critical, especially for those with serious infections for which beta-lactams are the treatment of choice. For these patients, a detailed medication and allergy history may lead to the decision of a graded- or full-dose challenge or an allergist consult as a means to remove inappropriately documented allergies and safely administer beta-lactams in the future.

Methods: Patients with documented allergic reactions to penicillins will be screened through a pharmacist chart review and will be contacted to set up a phone or in person medication and allergy history. An algorithm will be created for patients with documented penicillin allergies in order to assess the appropriate next steps of management based on patient information. A note template will also be created within the electronic medical record in order to document pertinent medical and allergy information obtained from the initial chart review and interview and will then provide recommendations based on the algorithm and patient information. This note will be alerted to the primary provider, who will have the option to order a graded- or full-dose challenge of a beta-lactam, order an allergist consult, or perform no further action if the allergy is deemed to be appropriately documented. The primary outcome will be the number of patients that are able to safely receive beta-lactams after the above screening process and the total number of patients assessed. Secondary outcomes will include the number and type of infections for which alternatives to beta-lactams are used due to a documented allergy, number

and type of antibiotics used as alternatives to beta-lactams due to a documented allergy, and any adverse reactions from dose challenges.

Results: Data to be presented at the Great Lakes Residency Conference.

Conclusion: Data to be presented at the Great Lakes Residency Conference.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-390

Poster Title: Direct oral anticoagulant (DOAC) adherence and the risk of stroke among patients with atrial fibrillation

Primary Author: Jisha Jacob, Milo C. Huempfner VA Clinic, WI; **Email:** jisha.jacob@va.gov

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Purpose: Unlike warfarin, direct oral anticoagulants (DOACs) have fewer drug-drug and drug-food interactions and do not require frequent laboratory monitoring. However, given the short half-lives of direct oral anticoagulants (DOACs), a high degree of medication adherence is crucial for reducing the risk of thrombotic events in patients with atrial fibrillation. The lack of need for frequent monitoring and close follow-ups may limit opportunities for early detection of medication non-adherence. The objectives of this retrospective analysis are to characterize adherence patterns of DOACs among patients with atrial fibrillation and analyze their association with long-term patient outcomes.

Methods: This will be a retrospective analysis of patients with atrial fibrillation who were initiated on dabigatran, rivaroxaban, or apixaban within the last 3 years. Given the retrospective nature of this analysis, it will be exempt from institutional review board approval. Patient records will be obtained from the Veterans Affairs Corporate Data Warehouse (VA CDW). Data collected and analyzed will include patient demographics, CHADS2 score, HAS-BLED score, and Charlson-Deyo comorbidity index. Measure of adherence will be determined by calculating 'Proportion of Days Covered' (PDC) based on fill dates and days supply. Additional calculations include gaps in therapy based on days not covered by anticoagulation therapy due to non-adherence. Primary end points of this study include stroke and all-cause mortality with a secondary end point of bleeding events. Comparisons between adherent and non-adherent groups will be assessed using chi-square test for categorical variables and independent samples t-test for continuous variables with normal distribution. Kaplan-Meier analysis will be used to determine the association between DOAC non-adherence and endpoints. Findings of this study will be used to identify patients who have PDC < 80% and alert providers for closer follow-up and intensive counseling about the risks associated with DOAC non-adherence.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 1-391

Poster Title: Implementing a work-flow redesign at a VA Medical Center for Patient Aligned Care Team PharmD services in order to increase access to care.

Primary Author: Monica Somerfelt, The Clement J. Zablocki VA Medical Center, WI; **Email:** monica.somerfelt@va.gov

Additional Author (s):
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Purpose: In 2015, the Madison VA Hospital streamlined their primary care services to better utilize all healthcare professionals within the PACT (Patient Aligned Care Team) model. Their initiative transitioned 27% of all primary care appointments away from primary care providers. This resulted in 850 new provider appointments per quarter at the Madison VA. The purpose of this project is to help redesign work-flow for PharmDs at a different VA Medical Center to increase PharmD disease state management and achieve increased access to both PharmD and primary care provider appointments for veterans.

Methods: This project will work towards work-flow redesign of current PACT PharmD services to allow for increased access to care. The success of the work-flow redesign will be evaluated by measuring the number of appointments PharmDs provide that reduce workload for primary care providers (PCPs). The number of additional appointments PCPs can take on per quarter as a result of increased PACT PharmD access will also be evaluated. Pre and post surveys will be utilized to determine patient, PharmD and other PACT members' satisfaction with the work-flow redesign.

Results: Data collection is currently in progress.

Conclusion: Final results and conclusions will be presented at the Great Lakes Pharmacy Residency Conference.

Submission Category: Ambulatory Care

Submission Type: Evaluative Study

Session-Board Number: 1-392

Poster Title: Assessing anticholinergic burden and medication interventions based on tele-neuropsychological assessments in a rural geriatric Veteran population

Primary Author: Daniel Langenburg, William S. Middleton Memorial Veterans Hospital, WI; **Email:** daniel.langenburg@va.gov

Additional Author (s):
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Purpose: The Geriatrics Research Education and Clinical Center (GRECC)-Connect Program offers care and recommendations through telehealth consults to patients residing in rural areas with limited geriatric specialty services. A neuropsychologist was added to this interdisciplinary service to address the mental and cognitive concerns of these patients. Administration of a full battery of neuropsychological tests is a key component of the service, however assessment of anticholinergic risk and medication intervention recommendations as they relate to these tests has not been evaluated. The purpose of this study is to determine the correlation between neuropsychological assessment results and anticholinergic burden in this patient population.

Methods: A retrospective chart review was completed for all patients referred to the GRECC-Connect service for tele-neuropsychological testing between March 2014 and January 2016. Standard baseline data were collected, including patient age, gender, race, marital status, highest level of education, service connection, time period of service, and total number of medications. The primary objective of this study was to correlate the patient's Anticholinergic Risk Scale (ARS) scores with their neuropsychological assessment results. These tests assess memory, executive functioning, verbal ability, attention, visuospatial functioning, and depression severity. Secondary objectives included evaluating medication interventions recommended by the interdisciplinary team following neuropsychological testing. Medications assessed included anticholinergics, dementia medications, and antidepressants.

Results: Forty-five patient met the criteria to be included in analysis. The average age of those included was 76.6 years and 48.8% were taking ≥1 anticholinergic medication. Significant positive correlations were detected between ARS scores and four specific subset scores of the

RBANS test and MMSE scores. No significant negative correlations were observed. 14 recommendations were made regarding anticholinergic medications, 8 regarding antidepressants, and 20 regarding memory medications.

Conclusion: No significant negative correlation was observed between neuropsychological assessments results and ARS scores. Significant positive correlations seen were likely due to the large age distribution skewing test results. Medication recommendations made by the interdisciplinary team appropriately matched neuropsychological assessments and subsequent dementia diagnoses.

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 1-393

Poster Title: Evaluation of pharmacy-led inpatient tobacco treatment intervention

Primary Author: Rebecca Wenzel, William S. Middleton Memorial Veterans Hospital, WI; **Email:** rebeccarwenzel@gmail.com

Additional Author (s):
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Purpose: Purpose: A pharmacy-led inpatient tobacco treatment service was implemented in an effort to improve tobacco treatment in the hospital setting while adhering to the Joint Commission measures, which include tobacco use screening, treatment, outpatient referral, and post-discharge assessment. The purpose of this retrospective chart review was to evaluate clinical outcomes after implementation of this pharmacy-led inpatient tobacco treatment service. The service includes pharmacy technicians and students completing tobacco use screenings during hospital admission and providing counseling and referral to outpatient tobacco treatment clinic for patients interested in tobacco cessation. Inpatient pharmacists then order tobacco treatment medications.

Methods: Methods: A retrospective chart review was performed for 301 patients who screened positive for tobacco use during hospital admission starting November 4, 2015 through February 4, 2016. The primary outcome includes tobacco quit rates one month post-intervention. Secondary outcomes include proportion of patients accepting tobacco treatment medication, counseling, and/or outpatient tobacco treatment clinic referral. Additional data collected includes tobacco treatment medication type, prescriber, and presence of order at discharge. Data collected for tobacco treatment outpatient referral will include the type of referral, type of provider ordering the referral, and status of tobacco treatment clinic consult post-discharge. Descriptive statistics were used to analyze baseline characteristics. Paired categorical variables were analyzed using McNemar test.

Results: Results: Of the approximately 1284 patients screened for tobacco, 25% were tobacco users. The one-month quit rate was 31% (n=51). The proportion of patients accepting medication, counseling, and/or outpatient tobacco treatment clinic referral were 41%, 42%, and 19%, respectively (n=301).

Conclusion: Conclusion: Hospitalization represents a unique time for tobacco intervention. Pharmacy-led tobacco treatment service is an effective mechanism for tobacco intervention. The tobacco quit rate was found to be similar to the national average, and there was a high acceptance of tobacco intervention during hospitalization.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-394

Poster Title: Pharmacist adherence to an extended interval of International Normalized Ratio (INR) follow-up protocol at twelve months

Primary Author: Michael Nagy, William S. Middleton VA Medical Center, WI; **Email:** nagyx025@gmail.com

Additional Author (s):
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Purpose: The 2012 American College of Chest Physician guidelines suggests an INR monitoring interval of up to twelve weeks in patients on stable doses of warfarin. The William S. Middleton Memorial Veterans Hospital implemented a research protocol to determine the feasibility and safety of extending the INR follow-up interval to twelve weeks in patients with long-term stability on warfarin. The protocol includes a progressively extended follow-up time frame, addresses procedures for adverse events, and covers necessary regulatory procedures. A previous quality assurance evaluation documented high fidelity to the protocol after six months. This evaluation aims to confirm continued high pharmacist fidelity.

Methods: A retrospective chart review was conducted to audit pharmacist adherence to the study protocol from months six to twelve following enrollment for all enrolled participants. Key factors evaluating pharmacist adherence to the protocol procedures include: (1) correctly planned follow-up duration for participants while on the extended interval follow-up protocol, (2) participant follow-ups with shorter than indicated durations, (3) participant follow ups with longer than indicated durations, (4) participants correctly removed or restarted on the extended interval follow-up protocol, (5) pharmacists correctly notifying study staff to a bleeding event, thromboembolic event, or serious adverse events, (6) pharmacists obtaining thorough assessment from participants at each visit. These outcomes will be assessed using descriptive statistics to determine the percentage of time each of the above events occurred. The study was approved by the University of Wisconsin-Madison Health Sciences Institutional Review Board and the Veteran Affairs Research and Development committee.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Evaluative Study

Session-Board Number: 1-395

Poster Title: Implementation and evaluation of a pharmacy team-based Iinpatient tobacco treatment service

Primary Author: Jinhee Park, William S. Middleton VA Medical Center, WI; **Email:** jinhee.park.29@gmail.com

Additional Author (s):
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Purpose: The purpose of this process implementation was to encourage tobacco treatment in patients admitted to the hospital while ensuring adherence to Joint Commission measures.

Methods: Process change was implemented in November 2015. The primary outcome of the study was to review adherence to three Joint Commission measures: percentage of patients admitted that are screened for tobacco use, percentage of patients offered counseling and U.S. Food and Drug Administration (FDA) approved tobacco cessation medications, and percentage of patients who accepted counseling and received FDA approved tobacco cessation medications. Secondary outcomes included a pharmacy technician motivational interviewing time study, comparison of motivational interviewing outcomes for pharmacy technicians versus pharmacists, and employee perception.

Results: October 2015 data collected by the Joint Commission Third Party was used as baseline prior to process implementation. The tobacco screening measure post implementation remained unchanged at one and three months (p=1.0) as it was one measure our facility had been meeting at baseline. At one month post process implementation in November 2015, 33% of patients who screened positive for tobacco use and were evaluated by the third party were offered counseling and medications, and was not significantly different compared to baseline(p=0.23). 17% of patients evaluated accepted tobacco counseling and treatment in November 2015, not significantly different from baseline (p=0.32). At four months, 100% of patients were offered counseling and treatment ($p < 0.01$) and 50% of these patients accepted counseling and treatment ($p < 0.05$), both significantly different from baseline.

Conclusion: There was a significant increase in adherence to Joint Commission measures at most recent assessment in January 2016.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 1-396

Poster Title: Evaluation of hepatitis C cure on patients at the Huntington, West Virginia Veterans Affairs Medical Center

Primary Author: Leah Michael, Huntington Veterans Affairs Medical Center, WV; **Email:** leah.michael3@va.gov

Additional Author (s):
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Purpose: The recent development of direct-acting antiviral agents have tremendously changed hepatitis C virus treatment. Direct-acting antivirals have made a substantial impact on clinical cure rates. The purpose of this study is to evaluate the impact of sustained virologic response following treatment with direct-acting antivirals on extrahepatic manifestations of hepatitis C such as, blood pressure, total cholesterol, low-density lipoprotein, aspartate aminotransferase, alanine aminotransferase, glycosylated hemoglobin, international normalized ratio, platelets, mortality, medication changes, and reported adverse drug events.

Methods: A retrospective chart review will be conducted on patients who have obtained clinical hepatitis C cure evaluating the impact of sustained virologic response on extrahepatic manifestations (listed above) and adverse drug reactions during Hepatitis C treatment. Results and conclusions pending and will be presented at ASHP Midyear Clinical Meeting.

Results: Results and conclusions pending and will be presented at ASHP Midyear Clinical Meeting.

Conclusion: Results and conclusions pending and will be presented at ASHP Midyear Clinical Meeting.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 1-397

Poster Title: Drug use evaluation of proton pump inhibitor prescribing in the elderly at a Veterans Affairs Medical Center

Primary Author: Aleta Smithbauer, Louis A Johnson Veterans Affairs Medical Center, WV;
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Additional Author (s):
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Purpose: The American Geriatric Society 2015 Updated Beers Criteria recommends avoiding the use of proton pump inhibitors for greater than eight weeks due to an increased risk of Clostridium difficile infection, bone loss, and fractures. Indications for long-term use include high-risk patients such as those taking corticosteroids or non-steroidal anti-inflammatory drugs, patients with erosive esophagitis, Barrett's esophagitis, pathological hypersecretory conditions, or those who have demonstrated a need for continued therapy such as discontinuation failure or histamine-2 blocker failure. The purpose of this project is to evaluate the appropriateness of proton pump inhibitor prescribing in a sample of elderly Veterans Affairs patients.

Methods: A retrospective chart review study has been submitted and approved by the Institutional Review Board and the local Research and Development Committee. The computerized patient record system will be used to identify patients 65 years or older who were prescribed omeprazole or pantoprazole for at least a 60 day supply between the dates of March 1, 2016 and May 31, 2016. Patients will be randomly selected for inclusion in the study up to a maximum sample size of 150 patients. Data collected will include age, medication, duration of therapy, and indication for use. Each proton pump inhibitor prescription will then be assessed for appropriate prescribing based on the American Geriatric Society 2015 Updated Beers criteria recommendations. Data will be reported without patient identifiers in order to maintain confidentiality. Collected data will be analyzed and reported as total number or percentage and compared for patterns and trends. Data analysis will allow determination of appropriate or inappropriate prescribing of omeprazole and pantoprazole among geriatric patients.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 1-398

Poster Title: Integration of direct oral anticoagulant monitoring into an established pharmacist-managed anticoagulation clinic at the Louis A. Johnson Veterans Affairs Medical Center

Primary Author: Sara Stover, Louis A. Johnson VA Medical Center, WV; **Email:** sdstover@mix.wvu.edu

Additional Author (s):
Melissa Murray

Purpose: Direct Oral Anticoagulants (DOACs) (dabigatran, rivaroxaban, apixaban, and edoxaban) are listed on the national formulary and are increasingly being prescribed instead of warfarin. Evidence for the optimal management and follow-up of patients receiving DOACs is currently lacking. The VA Pharmacy Benefit Management Services recommends follow-up monitoring of renal function and complete blood count with platelets annually or more frequently in patients with increased bleeding risk, renal impairment, or those 75 years or older. The purpose of this project is to create a systematic process for ongoing monitoring of patients receiving DOACs to ensure their safe use and appropriate prescribing.

Methods: This quality improvement project has been declared not human subject research by the Institutional Review Board and approved by the local Research and Development Committee. Based on monitoring practices at other VA anticoagulation clinics, patients will be scheduled into the pharmacy anticoagulation clinic at six month intervals for monitoring of renal function and complete blood count with platelets, as well as assessment of adherence and any anticoagulation related complications. Patients with significant renal dysfunction will be scheduled more often, as clinically appropriate. To improve adherence with monitoring requirements, prescriptions for DOACs will be limited to a 90-day supply with one refill, as this practice has been effective in ensuring follow-up for patients on warfarin therapy. A policy will be developed outlining clinic and patient responsibilities and will be incorporated into the clinic's existing standard of practice. The medical center memorandum (MCM) 119-32, which includes policies and responsibilities of the facility's anticoagulation management program, will be revised to include DOAC monitoring. The revised MCM will also address management of patients who require discontinuation of DOAC therapy due to renal function decline; primary care will be responsible for determining if anticoagulation should be discontinued or if the

patient is a suitable candidate for warfarin. A letter will be created to notify all patients receiving DOAC therapy of the change in monitoring requirements.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 1-399

Poster Title: Impact of ICU settings and environment factors on delirium within a Veterans Affairs Medical Center

Primary Author: Jalyn Robinson, Martinsburg VA Medical Center, WV; **Email:** jrobinso4@su.edu

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Purpose: Delirium is a debilitating syndrome for patients, families, and healthcare providers among acute care settings. The influence on delirium incidence is multifactorial with the acknowledgement that the environment for care impacts development and outcomes. However, the extent of this environmental impact among intensive care unit (ICU) patients has not been fully recognized. The purpose of this study is to assess the incidences of delirium within differing ICU settings by taking advantage of a unique occurrence within a Veterans Affairs Medical Center in which the ICU was renovated and changed locations for a period of time.

Methods: This study is pending approval from the Institutional Review Board and Office of Research and Development. Three distinct ICU settings— pre-renovation fourth floor ICU, temporary second floor ICU, and post-renovation fourth floor ICU— will be assessed for delirium incidence among patients during the pre-specified time periods from November 2015 through March 2016. Patients admitted to one of the ICU settings for at least 24 hours will be included if exclusion criteria is not met (unresponsiveness throughout admission; diagnosis of alcohol/substance withdrawal; pre-existing history of dementia, cognitive impairment, Alzheimer's disease, or traumatic brain injury; delirium, altered mental status, altered cognition, or confusion at admission). Primary endpoint of delirium incidence will be determined through fulfillment of at least one of three criteria via electronic medical record assessment: (1) subjective/objective documentation meeting DSM-5 delirium diagnostic criteria, (2) positive CAM-ICU documentation, (3) documented administration of "as-needed" typical/atypical antipsychotics. Secondary endpoints will include the time to delirium onset, cumulative delirium duration, and mortality during ICU admission. Confounding variables also to be assessed will include: age; gender; benzodiazepine, opioid, diphenhydramine, zolpidem, or eszopiclone administration during ICU admission; intubation at any point during ICU

admission; ICU length of stay; illness severity at ICU admission assessed by APACHE II score; and co-morbidities assessed by CCI score.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-400

Poster Title: Impact of secure messaging on glycemic control in patients with uncontrolled diabetes

Primary Author: Jason Abraham, Veterans Affairs Medical Center, Martinsburg, WV; **Email:** abrahamjason92@gmail.com

Additional Author (s):
Adam Gold

Purpose: There is a high incidence of diabetes among the Veteran population. It requires continuous care and support. However, there are obstacles to patients' care including lack of transportation, inconvenient appointment times, and lengthy waiting room times. Secure messaging attempts to resolve these issues by facilitating remote communication between the provider and the patient through an encrypted channel to monitor blood glucose levels and manage medications. The purpose of this study is to discern the effectiveness of utilizing secure messaging in reducing HbA1C values, compare HbA1C reduction between different pharmacotherapy regimens, and analyze potential risks associated with secure messaging.

Methods: This is a single-center, retrospective, chart review of the electronic medical records of patients seen by a Clinical Pharmacy Specialist in an outpatient clinic, which is currently pending Institutional Review Board and Research and Development Committee approval. The charts of approximately 150 veterans diagnosed with diabetes and seen by the provider via secure messaging or clinical visits will be reviewed over a one year time period between November 2015 and October 2016. The case group consists of patients who had at least two secure messaging interactions with the provider, while the control group has patients with less than two interactions. Patients in the case group and the control group have a baseline measure prior to the intervention and two HbA1C values collected or estimated using ancillary blood glucose values within six and twelve months after the intervention for comparison. Patients' pharmacotherapy regimens will be collected in both groups to analyze differences in HbA1C reduction across patients who use insulin versus those who only use oral medications. Acute hypoglycemic, hyperglycemic, and diabetic ketoacidosis incidences that led to emergency room visits and inpatient admissions between November 2015 and October 2016 will also be collected and recorded for all patients.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 1-401

Poster Title: Retrospective analysis of treatment outcomes in patients with comorbid attention deficit hyperactivity disorder (ADHD) and bipolar disorder at a Veterans Affairs mental health clinic

Primary Author: Shawn Kohlhaas, Veterans Affairs Medical Center, Martinsburg, WV; **Email:** shawn.kohlhaas@va.gov

Additional Author (s):

Purpose: Bipolar disorder proves to be one of the more difficult psychiatric disorders to manage for the US healthcare system and poses one of the biggest clinical risk factors for suicidality in front of schizophrenia and depression. A paucity of data exists showing the effects of co-morbid substance abuse disorder and general anxiety disorder on bipolar treatment outcomes. In a few of these studies, ADHD had the biggest impact on suicidality and had shorter remission periods when compared to other comorbidities. The purpose of this study is to determine the effects that ADHD may have when diagnosed concurrently with bipolar disorder.

Methods: This study has been approved by the Washington DC VAMC institutional review board. Final approval by DC VAMC research and development is pending. A VAMC database search will be conducted utilizing ICD-9, ICD-10, and SNOWMED codes to determine the number of patients with diagnosis of both ADHD/ADD and bipolar disorder along with patients without ADHD co-diagnosis. Demographic data along with reported suicide attempts, incidence of manic and depressive episodes, number of acute psychiatric admission, and the average number of psychiatric medications. Bipolar patients with co-morbid ADHD will be matched 1:1 with bipolar subjects without co-morbid ADHD diagnosis.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 1-402

Poster Title: Pharmacist led new transition clinic: Pilot program in primary care

Primary Author: Roxanne Finn, Cheyenne VA Medical Center, WY; **Email:** roxanne.finn@va.gov

Additional Author (s):

Purpose: As Veterans continue to transition from various outside health-care systems into the Veteran Affairs Medical Center (VAMC), they often bring medications not in line with the Veteran Affairs (VA) national or local formulary. In prescribing any non-formulary medication within a VAMC, there is a Prior Authorization Drug Review (PADR) process that often causes increases to provider work load. The average number of PADRs avoided after conversion from non-formulary to VA formulary will be evaluated. The objective of this study is to improve patient care by streamlining and improving formulary compliance.

Methods: Single pharmacist led clinic, will identify new Veterans that are transitioning care from outside health care providers to the Veteran Affairs Medical Center or those Veterans returning to the VA after leaving for one year or greater. This quality improvement study will obtain a patient list derived from a Saturday provider clinic using an electronic medical record system. The following data will be assessed through phone interview: all current medications and their formulary status, over-the-counter herbals and supplements, patient's date of birth, age, allergies and disease states. The results will address the average number of PADRs avoided by pharmacy staff, average number of therapeutic interchanges accepted by the primary care provider, percent improvement in medication appropriateness and if available, the average cost avoidance of intervention to pharmacy. All data will be recorded in a patient/control database for further analysis. Per VA Handbook 1058.05 and 1200.19, this study is exempt from review by an Institutional Review Board (IRB) because the study is defined as quality improvement and aims to improve patient care within the VA

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 1-403

Poster Title: Pharmacist led benzodiazepine taper clinic: Impact on benzodiazepine use in primary care

Primary Author: Leah Arnbrecht, Cheyenne Veteran Affairs Medical Center, WY; **Email:** leah.arnbrecht@va.gov

Additional Author (s):

Purpose: Long-term benzodiazepine use is associated with numerous adverse drug events including dependency, withdrawal, addiction, and cognitive impairment. The objective of this study is to compare benzodiazepine use in primary care before and after initiation of a pharmacist led clinic including patient outreach, education, and a step-wise benzodiazepine taper.

Methods: This quality improvement study will be submitted to the local Pharmacy and Therapeutics Committee for approval. Veterans receiving one or more benzodiazepine, on a scheduled basis, for more than 190 days, and prescribed by a primary care physician will be identified in the medical record. With consent from primary care, veterans will receive information about the risks of long-term benzodiazepine use, the risks of benzodiazepine use over the age of 65, and/ or the risks of benzodiazepine use in combination with an opioid analgesic. If the veteran is interested in discontinuing the benzodiazepine, a recommendation will be included in the medical record incorporating a step-wise benzodiazepine taper. With approval from the provider, veterans will have the opportunity to come into clinic or receive the benzodiazepine taper via mail. Contact information will be provided to the veteran for follow-up. Age, benzodiazepine, strength, dose, directions, provider, and indication will be recorded and maintained confidentially. All benzodiazepines will be converted to diazepam equivalents. The total amount of diazepam equivalents prescribed by primary care providers will be averaged into a total daily dose. The change in total average daily dose of diazepam equivalents before and after initiation of pharmacist led interventions will be compared to determine the impact of benzodiazepine use in primary care.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 1-404

Poster Title: Assessment of primary care access and blood pressure control in a pharmacist managed hypertension clinic: A rural Veterans Affairs quality improvement project

Primary Author: Pace Owens, Sheridan VA Health Care System, WY; **Email:** Pace.Owens@va.gov

Additional Author (s):
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Purpose: Access to quality primary care for rural veterans continues to be a focus for the Department of Veterans Affairs. Currently, 3.7 thousand veterans with hypertension seek primary care within this rural health care system, and 36% have blood pressures greater than 140/90 mmHg. The pharmacy department offers a consultative service for primary care conditions, but their services are underutilized. The goal of this hypertension focused quality improvement project is to improve access to quality care and increase achievement of blood pressure goals.

Methods: Prior to initiation, this quality improvement project was reviewed and approved by the local Pharmacy and Therapeutics Committee. Patients diagnosed with essential hypertension with the highest recent blood pressure values, will be considered for enrollment into the Pharmacotherapy Clinic. Patients with a hospice or palliative care diagnosis, non-hypertension related medical instability, or those without chronic hypertension will be excluded from this project. Consults for enrollment into clinic will be generated for primary care providers to sign as appropriate per their clinical discretion. Providers and patients will be allowed to opt out of clinic at any time if they so choose. From October through March, patients will be evaluated and treated according to evidence-based literature and clinical practice guidelines. The primary outcome of blood pressure treatment will be assessed by measuring the percentage of patients reaching individualized blood pressure goals; utilizing both descriptive and inferential statistics. All other data collected will be assessed using descriptive statistics. In order to assess primary care access, the number and frequency of pre-

enrollment provider visits that addressed hypertension over the previous year will be compared to post-enrollment number and frequency of visits.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 1-405

Poster Title: Implementation of a pharmacy led pain clinic focusing on high-risk opioid patients: A resident-driven quality improvement project

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Purpose: In the last 15 years the number of opioid overdoses in the United States has quadrupled. The recently released CDC opioid guidelines focus on decreasing opioid dosages while optimizing non-opioid therapy. The primary objective of this quality improvement project is to optimize pain management regimens while utilizing risk evaluation and mitigation strategies. This includes improving safety and decreasing risk through reductions in opioid dosages, the use of non-pharmacologic measures, and the use of non-opioid medications.

Methods: Prior to beginning, this quality improvement project was approved at this VA facility's Pharmacy and Therapeutics Committee. The two weeks directly following clinic approval will be focused on identifying the appropriate patients for the pharmacy led pain clinic. Patients will be excluded if the patient refuses, is hospice or palliative care, has active cancer, or the primary care provider chooses not to sign the consult. The pharmacy led pain clinic is targeting the most high-risk patients receiving opioids at this VA facility, including patients on greater than or equal to100 daily morphine milligram equivalents (MME). After identifying appropriate patients, the pharmacist will enter consults and perform a chart review on patients prior to seeing them in clinic. From October through March, patients enrolled in clinic will be evaluated and managed by the pharmacist for safety and optimization of their pain management regimen. Patients will be required to complete the Brief Pain Inventory at first and last clinic visits. A repeat chart review will be completed at the last patient visit. Descriptive statistics will be utilized to assess change in total daily MME dose and change in Brief Pain Inventory metrics. Secondary outcomes include number of patients prescribed naloxone, number of patients with a urine

drug screen in the last year, and number of patients with Prescription Drug Monitoring Program checked in the last year.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-001

Poster Title: Retrospective evaluation of opiate discharge prescriptions from the emergency department

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Purpose: Acute pain is the most common reason patients come into the Emergency Department (ED), and these patients are often discharged with prescriptions for opiate analgesics. Long-term opioid use often begins with treatment of acute pain, and prescribing practices over the years have led to a nation-wide opiate epidemic. Various organizations including the Centers for Disease Control and Prevention have published guidelines for prescribing opioids. This retrospective review is an evaluation of discharge opiate prescribing patterns from the ED of a non-for-profit community hospital. The purpose of this study is to compare institution's prescribing patterns to the current guideline-recommended practices.

Methods: Data will be collected retrospectively by a pharmacy resident from patient electronic medical records. The patient population will include all patients discharged from the Emergency Department of a single non-for-profit community hospital from June through August 2016. Patient data will be recorded and analyzed on a Microsoft Excel® spreadsheet. The primary composite outcome is the percentage of discharge opiate prescriptions that followed guideline and hospital policy recommendations in regards to duration of prescribed therapy (≥ 3 days), total quantity of opiate pills prescribed (≥ 30 pills), and prescriptions for long-acting opiate formulations (including, but not limited to, fentanyl patches, methadone, long-acting oxycodone). Secondary endpoints include the separate components of the primary composite outcome, patient demographic data, primary diagnosis, chief complaint, opiate(s) prescribed at ED discharge, maximum opiate dose per day and total opiate dose prescribed (in oral morphine equivalents), utilization of opioid and non-opioid analgesic therapies in the ED, and patient-reported pain levels before and after analgesics were provided (when available), and any noted

analgesic-related side effects. Continuous data will be presented as mean±standard deviation for normally distributed data and as median (interquartile range) for non-normally distributed data. Statistical methods for analysis of the primary endpoint and secondary endpoints will be determined once data collection is complete.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Descriptive Report

Session-Board Number: 8-002

Poster Title: Impact of a clinical pharmacist driven sexually transmitted disease treatment protocol in the emergency department

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Additional Author (s):
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Purpose: In the emergency department, patients are screened for chlamydia and gonorrhea, but are often discharged before the results are finalized. In 2015, clinical pharmacy was granted the autonomy to initiate a sexually transmitted disease treatment protocol. The clinical pharmacist documents the results, notifies and counsels the patient and prescribes appropriate therapy if it was not received in the emergency department. The purpose of this review was to assess the impact of a clinical pharmacist driven protocol to screen, communicate and effectively treat patients who have been evaluated for sexually transmitted diseases within the emergency department of a regional referral hospital.

Methods: To evaluate the impact of this clinical pharmacist led protocol in the emergency department, the following were reviewed: the rates of patients who screened positive for either chlamydia or gonorrhea, the rates of patients with appropriate antimicrobial therapy and the rates of patients who received initiation or modification of antimicrobial therapy by a clinical pharmacist. To evaluate the impact of follow-up by a clinical pharmacist, the rate of success of contacting and counseling patients by phone who screened positive for chlamydia or gonorrhea was reviewed.

Results: Of the five hundred and forty-two patients who were screened in the emergency department, ninety-two of those patients were positive for either chlamydia or gonorrhea. Seventy-five percent of patients who screened positive for either chlamydia or gonorrhea were given empiric antimicrobial therapy while in the emergency department. Only twenty-six

percent of chlamydia or gonorrhea positive patients received the appropriate antimicrobial therapy per the Centers for Disease Control and Prevention treatment guidelines. Clinical pharmacists were able to contact and counsel seventy-four percent of patients who screened positive for either chlamydia or gonorrhea. Initiation or modification of antimicrobial therapy was made in forty-one percent of patients by clinical pharmacists based on the treatment algorithm recommended by the Centers for Disease Control and Prevention treatment guidelines.

Conclusion: Clinical pharmacists played a critical role in contacting and counseling patients by phone for either chlamydia or gonorrhea. Clinical pharmacists had a positive impact on patients with chlamydia or gonorrhea by having the autonomy to initiate or modify antimicrobial therapy per a collaborative practice agreement. There is potential to expand the clinical pharmacist's impact for the treatment of patients with sexually transmitted diseases by developing an expedited partner therapy protocol in the future. Expedited partner therapy is permissible in forty states and is strongly recommended by the Centers for Disease Control and Prevention treatment guidelines.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-003

Poster Title: Evaluation of fluoroquinolone use and resistance in urinary tract infections at a community hospital

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Purpose: In May 2016, the Food and Drug Administration (FDA) issued a safety announcement warning providers that the risks generally outweigh the benefits for use of fluoroquinolones (FQs) in patients with less serious infections including uncomplicated urinary tract infections (UTIs). Fluoroquinolone use in UTIs should be reserved for patients lacking alternative treatment options. Additionally, resistance to fluoroquinolones in common urinary pathogens is steadily increasing and prior FQ exposure may contribute to this resistance. This retrospective chart review assesses the prescribing rates and the rate of resistance of FQs in patients treated for uncomplicated urinary tract infections at a community hospital.

Methods: This retrospective chart review included patients 18 years of age and older admitted to our institution with a positive urine culture from April 1, 2016 – July 31, 2016. Patients with multiple sources of infection (i.e. pneumonia and UTI), those who were not treated with antibiotics, culture contamination, and those with only fungal isolates were excluded from this study. Isolates with less than 10,000 colony-forming units per milliliter (cfu/mL) were also excluded. Only the first culture for each patient within the study period was included. Patients were evaluated for FQ-sparing treatment options as well as FQ resistance within the culture and sensitivity reports. Microbial isolates, antimicrobial therapy for UTI, and fluoroquinolone use within the three months and year prior to urine collection were also collected.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-004

Poster Title: Retrospective assessment of stress ulcer prophylaxis medication therapy in intensive care unit patients

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Purpose: Critically ill patients are at an increased risk for developing stress-related mucosal disease and its complications such as bleeding. Risk factors for stress-related mucosal bleeding (SRMB) includes prolonged mechanical ventilation, coagulopathy, sepsis, head injuries, and organ failures. To reduce incidence of SRMB, physicians often prescribe acid suppression therapy with proton pump inhibitor (PPI) or histamine H2 receptor antagonist (H2RA). However, patients are often continued on the acid suppression therapy when they are no longer at risk for SRMB. The purpose of this study is to assess the appropriateness of stress ulcer prophylaxis initiation and continuation at a not-for-profit community hospital.

Methods: Data will be collected retrospectively by a pharmacy resident from patient electronic medical records. Criteria for stress ulcer prophylaxis (SUP) therapy will be determined through a literature review. The patients who will be assessed will include all intensive care unit (ICU) patients who are on a PPI or H2RA for SUP. Patients who are on PPI or H2RA prior to admission for predefined appropriate indications, or patients who have Barrett's Esophagus, acute Helicobacter pylori, acute gastrointestinal bleeding, or Zollinger-Ellison will be excluded from this evaluation. The primary endpoint will be percent of patients appropriately on a PPI or H2RA in ICU based on the predetermined criteria. Secondary endpoints will include percent of patients appropriately on PPIs or H2RAs following ICU discharge, cost of SUP therapy, and incidence of SRMB.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-005

Poster Title: Evaluating the patient-perceived impact of outpatient clinical services offered by on-site outpatient community pharmacists in the District of Columbia

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Additional Author (s):
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Purpose: The innovative services offered in the outpatient community pharmacy model may include bedside medication delivery, patient counseling, medication reconciliation, medication therapy management, disease state management, and medication adherence assistance program. Within the District of Columbia, there are 14 hospitals; five have an on-site outpatient community pharmacy. To evaluate the patient-perceived impact and value of outpatient clinical services offered by on-site community pharmacists, a 16-item survey was developed to measure the patient's feelings about outpatient clinical services.

Methods: A cross-sectional survey was designed and is currently undergoing approval by the institutional research review board. A Likert Three-Point Scale will be utilized to assist with assessing the patient-perceived value and likelihood to participate in clinical services offered by on-site outpatient community pharmacists. Once approved, student pharmacist volunteers and pharmacy staff from outpatient pharmacies will assist with survey distribution and collection. Surveys will be distributed to one hundred patients who previously received or did not receive clinical services from one of the five identified outpatient pharmacies in the District of Columbia. Participating patients will be asked to complete a paper survey, which will be collected by research volunteers and by using an on-site data collection box at each of the participating outpatient clinics. Participants will be instructed to select choices by indicating the best possible answer. Data will be collected for four months from institutional research board approval. The survey results will be evaluated utilizing SPSS Statistical Software. Descriptive analyses will be used to identify patient demographics, knowledge of offered clinical services, and the patient-perceived value of services provided.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-006

Poster Title: Comparison of time to intubation between rocuronium vs. succinylcholine for pediatric patients undergoing rapid sequence intubation

Primary Author: Boh Song, Children's National Health System, DC; **Email:** bsong2@childrensnational.org

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Purpose: At Children's National Health System, succinylcholine has been favored for emergent airway management in the Emergency Department due to its rapid onset, dependable effect, and short duration of action during intubation. In the pediatric intensive care unit, rocuronium has been favored for its dependable duration of action and minimal adverse effect profile. This retrospective study will compare the mean time to intubation for the neuromuscular blocking agents (NMBA) administered for rapid sequence intubation in the emergency department. Analysis of data collected from this study may facilitate standardization of care for rapid sequence intubation across various units within our institution.

Methods: This study is pending IRB approval. Study will be a retrospective chart review evaluating patients receiving succinylcholine or rocuronium in the ED for RSI between January 1, 2012 and July 1, 2016. All patients greater than 30 days of age and less than or equal to 18 years of age receiving succinylcholine or rocuronium in the emergency department for rapid sequence intubation will be included. Data to be collected includes: patient demographics, reason for rapid sequence intubation, NMBA and dose, time to intubation, and vital signs with laboratory values to measure successful intubation or adverse events. Primary end point will be the mean time to intubation between rocuronium or succinylcholine administration, defined as the time to post-intubation oxygen saturation greater than baseline, end tidal CO2 35-45 mmHg, or perceived successful intubation as documented in the chart.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-007

Poster Title: Comparison of Fixed versus Traditional Weight Based Dosing of Rasburicase in a Pediatric Population

Primary Author: Dimitrios Savva, Children's National Health System, DC; **Email:** dsavva2@childrensnational.org

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Purpose: The American Society of Clinical Oncology guidelines recommend rasburicase for the treatment of pediatric patients with hyperuricemia at risk of tumor lysis syndrome using a weight based dose of 0.1-0.2mg/kg once daily for 1-7 days. However, there has been a trend in practice due to recent data showing benefit using a fixed dose approach. Based on these studies for adolescent or adult sized children, Children's National Hospital System providers started prescribing rasburicase 0.15-0.2mg/kg [max 6 mg]. The purpose of this study is to evaluate the efficacy and safety between fixed and weight based dosing of rasburicase in a pediatric population.

Methods: This study, following the approval of the Institutional Review Boards, will be a retrospective cohort chart review of oncology patients receiving rasburicase for the management of hyperuricemia from January 1st, 2007 to August 31st, 2016. Patients less than 18 years old with a documented diagnosis of a hematological malignancy and baseline uric acid level will be included in this study; patients less than 30 kilograms will be excluded. The primary endpoint of this study is time to treatment success of normalization of uric acid level, as defined per age group. The secondary endpoints of this study include percentage of patients with uric acid normalization at 24 hours, percent reduction of uric acid level at 24 hours, total number of doses given to achieve a normal uric acid level, incidence of GI related toxicities, and acute kidney injury. Patients will be identified by electronic medical record numbers. Data will be collected on demographic information, baseline electrolytes and white blood cells, serum creatinine, and uric acid level at baseline and at time of rasburicase discontinuation, other therapies used for hyperuricemia management, number of rasburicase doses received, number of rasburicase vials used, reports of nausea, vomiting, and abdominal pain, patient tumor lysis

risk category, and patient's presentation of either laboratory tumor lysis syndrome or clinical tumor lysis syndrome.

Results: n/a

Conclusion: n/a

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-008

Poster Title: Evaluation of foscarnet dosing efficacy in pediatric stem cell transplant patients

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Purpose: Cytomegalovirus infection is associated with significant mortality and morbidity. Foscarnet is second line therapy for ganciclovir-resistant infection. Foscarnet has been shown to be as effective as ganciclovir in treating cytomegalovirus. A few studies have been conducted, but an effective dosing regimen of foscarnet in pediatric stem cell transplant patients for induction therapy has not been established. The purpose of this study is to evaluate the foscarnet dosing regimens to result in cytomegalovirus viral clearance, defined as undetectable blood polymerase chain reaction viral levels by day 28 of treatment, in pediatric stem cell transplant patients diagnosed with cytomegalovirus positive antigenemia.

Methods: This study will be a historical cohort chart review evaluating pediatric stem cell transplant patients who received foscarnet therapy for cytomegalovirus from January 1, 2007-February 1, 2016 at Children's National Health System, following the approval of the Institutional Review Board. Patients will be identified using a Cerner Discern Analytics report to include hematopoietic stem cell transplant patients, age 0-18 years old with cytomegalovirus blood polymerase chain reaction levels greater than or equal to 1,000 copies/mL. Patient data will be evaluated to assess the primary and secondary endpoints. The primary endpoint is to determine the percent of patients achieving cytomegalovirus viral clearance, defined as undetectable cytomegalovirus blood polymerase chain reaction levels less than 1,000 copies/mL by day 28 of treatment. Secondary endpoints include: the percent of patients achieving undetectable cytomegalovirus viral levels by day 14 of treatment, median time in days on foscarnet to undetectable cytomegalovirus blood levels, dosing regimen of foscarnet used to achieve undetectable viral load, percent of patients experiencing Grade 3 or Grade 4 nephrotoxicity defined by the National Cancer Institute's Common Terminology for Adverse Events criteria, percent of patients requiring dose adjustment for renal impairment, percent of patients requiring a change in therapy from foscarnet to another agent, cytomegalovirus

recurrence within 180 days of undetectable cytomegalovirus blood levels, and mortality 6 months after first positive cytomegalovirus blood level and cause of death.

Results: In progess

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-009

Poster Title: Barriers to hepatitis c cascade of care in an urban hospital in Washington, D.C.

Primary Author: Lindsy Liu, Howard University Hospital, DC; **Email:** lindsyliu@gmail.com

Additional Author (s):
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Purpose: The purpose of this study is to determine what barriers to treatment exist in the Hepatitis C care cascade in an urban hospital in Washington, D.C. using a retrospective chart review.

Methods: A retrospective chart review of all hepatitis C positive patients, with an ICD 9/10 code of HCV, above the age of 18, who had at least one admission to the hospital or its ancillary services between 8/1/2015-8/1/2016. Data regarding patient demographics (race, gender, age, weight), baseline liver laboratory values, insurance type, co-infection, comorbid conditions, allergies, current medications, past medications, presence of HCV risk factors, the date of HCV diagnosis, referrals, HCV RNA, MetaVir score, FibroSURE results, HCV genotype, number of treatment attempts, barriers to care, date treatment was initiated, reasons for no treatment, SVR, response to treatment, compliance, reason for discontinuing treatment, and time from diagnosis to treatment will be collected from patient charts. The data will be collected in a data abstraction tool specifically created for this project and swill be used to assess barriers to care. All results will be analyzed using SPSS with appropriate statistics.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-010

Poster Title: The incidence of electronic medical record medication errors in a family medicine outpatient clinic at a teaching hospital in Washington, D.C.

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Purpose: The use of electronic medical records in clinical practice has helped to improve the quality of patient care by reducing the likelihood of medication errors. Medication errors continue to persist in spite of this, and further study of existing electronic medical records needs to be completed to quantify the number and types of medication errors that exist. This study will identify the types of medication errors in a family medicine outpatient clinic electronic medical record to determine the need for a clinical pharmacist on site to provide routine medication reconciliation and therapeutic interventions during clinic visits.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a retrospective study, which will be conducted on all patients who have been seen at least once at the Family Medicine Outpatient Clinic at Howard University Hospital from September 1, 2015 through August 31, 2016. The following data will be collected from the electronic medical record: patient demographics such as age, gender, date of birth, race, weight, and height. Allergies, renal function, liver function tests (AST, ALT, T. Bili, and Alk Phos), date of visit, physician name and practice category (attending, resident, or fellow), comorbidities, current medications, medication error types identified, and dates of medication reconciliations (if documented). Medication error types include: incorrect dosing, renal adjustment, hepatic adjustment, duplication of therapy, incorrect frequency, drug-drug interaction, contraindication, allergy, or no indication. Information regarding the prescribers will be used to determine patterns of prescribing errors among attendings, residents, and fellows. All data will be secured under lock and key and/or encrypted by password to prevent an unintended misuse of data and will be analyzed using SPSS with appropriate statistics.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-011

Poster Title: Evaluation of vancomycin dosing and monitoring at an urban, community hospital in Washington, D.C.: A pre- and post- intervention study

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Purpose: Vancomycin is used to treat a number of serious bacterial infections, including methicillin-resistant staphylococcus aureus (MRSA) infections and sepsis. There are a number of dosing and monitoring problems that may arise when vancomycin is ordered. These include: initial dosing and frequency errors, incorrectly timed troughs, and non-deescalation of therapy when appropriate. This is a drug use evaluation of vancomycin, performed pre- and post-intervention. The primary objective of this research is to optimize vancomycin administration at an urban, community hospital in Washington, D.C.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a full drug use evaluation of vancomycin with two phases: pre- and post-intervention. Intravenous vancomycin orders for adult patients between 07/17/2016-09/23/2016 (pre-intervention) and 11/27/2016-01/29/2017 (post-intervention) will be identified using the electronic medical records system. Data regarding patient demographics, diagnosis, microbiology report, renal function, vancomycin dosing regimen, and therapeutic drug monitoring will be collected. Recorded information with patient identifiers will be kept confidential and discarded of appropriately at the conclusion of the study. The collected data will be used to evaluate for appropriateness of vancomycin dosing and monitoring, pre- and post-intervention. Interventions will include: (1) update to the vancomycin protocol at the hospital, (2) education to practitioners via grand rounds and in-service presentations. The primary outcome of this research is the frequency of appropriate initial vancomycin dose and interval. The secondary outcomes are (1) frequency of appropriately timed troughs and (2) frequency of vancomycin de-escalation. The data will be analyzed using SPSS with appropriate statistics.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-012

Poster Title: Pharmacogenomics and Diabetes: The relationship between mood disorders and treatment outcomes.

Primary Author: Meighan LeGrand, Howard University Hospital, DC; **Email:** mlegrand@huhosp.org

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Purpose: To determine the relationship between mood disorders (depression, anxiety, post-traumatic stress disorder, and bipolar disorder) and hemoglobin A1c (HbA1c) in patients with Type 2 Diabetes at the Howard University Hospital Diabetes Treatment Center.

Methods: This prospective cohort study will include patients randomly selected from the Howard University Hospital Diabetes Treatment Center. Patients with Type 2 Diabetes between the ages of 18-65 will be included in the study. Patients with Type 1 Diabetes or Gestational Diabetes will be excluded. Each study visit will take approximately 20 minutes and will occur during scheduled diabetes follow-up appointments. The Patient Health Questionnaire (PHQ-9) will be used to screen for depression and the My Mood Monitor (M3) screening tool will be used to screen for depression, anxiety, post-traumatic stress disorder (PTSD), and bipolar disorder. PHQ-9 and M3 Scores, as well as HbA1c levels will be collected for each patient. Other data to be collected includes patient age, gender, ethnicity, previous HbA1c values, and current medications. All patient data will be de-identified and maintained confidentially.
Univariate statistical analyses will be conducted on patient demographic data. Regression analyses will be conducted to determine whether PHQ-9 and M3 scores are predictive of HbA1c levels. The study proposal will be submitted to the Howard University Institutional Review Board for approval.
Genetic material will be collected for pharmacogenomic testing via buccal swab and sent to a third party genomics company for analysis. A pharmacogenomic testing report will be generated for each patient and used for the development of future point-of-care pharmacogenomic testing algorithms for patients with Type 2 Diabetes.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Descriptive Report

Session-Board Number: 8-013

Poster Title: Developing an electronic pharmacy application to streamline delivery of information at a large tertiary care hospital

Primary Author: Parker Brumfield, Medstar Washington Hospital Center, DC; **Email:** brumfield.29@osu.edu

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Purpose: In today's age, we have a vast array of information at our fingertips. However, it can become overwhelming to find the most current information in a timely manner. Pharmacists play a crucial role in providing medication related information accurately at a rapid pace in our dynamic world of health care. Electronic applications are becoming a staple in everyday life, readily accessible from computers to handheld devices. The objective of this project is to create, develop, and implement an application which consolidates various pertinent resources into an accessible and convenient application.

Methods: This project will describe how we will create, develop, and implement an electronic application to ease access to pharmacy information at a large tertiary care hospital. It will be submitted to our Institutional Review Board for approval. The application will be developed through a website using currently available technology. Our aim is to make the application easily accessible to our associates from various electronic devices. The application will include clinical practice guidelines, therapeutic interchanges, drug monographs, educational materials, residency documents, policies and procedures, pharmacy department orientation, and links to drug information resources. It is a goal to link this application to our facility's current nursing application resulting in an all inclusive databank. A group of pharmacists will test the application and assist with content and functionality. The plan is to launch the application by April, 2017.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Descriptive Report

Session-Board Number: 8-014

Poster Title: Benefits of a specialty hepatitis c pharmacy within a hospital ambulatory clinic

Primary Author: Joanne-Ritzelle Woskov, MedStar Washington Hospital Center, DC; **Email:** jwoskov@gmail.com

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Purpose: Hepatitis C (HCV) is a chronic disease state that, under proper management and patient compliance, is treatable in an outpatient setting. Pharmacists have a unique ability to enhance patient care and treatment outcomes through oversight of medication regimen, insurance approval, direct dispensing of specialty medications, patient education, and medication compliance programs. Additionally, dispensing of specialty medications provides a significant source for revenue. The objective of this descriptive report is to describe the protocol and processes employed to incorporate a clinical pharmacist into specialty pharmacy operations.

Methods: This is a descriptive report of specialty pharmacy operations within a hospital ambulatory care clinic, to include both protocol and process development. It will be conducted in a large, tertiary, academic medical center. Institutional Review Board approval is pending. The electronic medical record system and provider documentation will be used to identify patients ≥ 18 years who have been diagnosed with and treated for HCV at the ambulatory specialty clinic between January 2016 and September 2016. The following patient data will be collected: medication regimen, length of therapy, number of prescriptions filled, medication insurance, outpatient pharmacy, and completion of therapy. All data will be recorded with patient identifiers removed and will be maintained confidentially. The primary outcome measures will be (1) the number of patients treated by the specialty pharmacy and (2) the revenue generated through direct medication dispensing operations.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-015

Poster Title: Evaluation of cangrelor use in a large tertiary care hospital

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Purpose: Cangrelor is indicated as an adjunct to percutaneous coronary intervention (PCI) to reduce the risk of periprocedural myocardial infarction (MI), repeat coronary revascularization, and stent thrombosis (ST) in patients who have not been treated with a P2Y12 platelet inhibitor and are not being given a glycoprotein IIb/IIIa inhibitor. Due to its high cost, the use of cangrelor at this large, tertiary care hospital is restricted to patients presenting with high-risk STEMIs, or not appropriately pre-loaded or adequately controlled by an oral P2Y12 agent. The objective of this study is to assess for the appropriate use of cangrelor at this institution.

Methods: This study will be submitted to the Institutional Review Board and conducted in the form of a retrospective drug utilization evaluation. A drug inquiry report will be generated to produce a list of patients who have received cangrelor from March 1, 2016 to October 1, 2016. Eligibility criteria will include patients who are 18 years of age and older and have received cangrelor during their hospitalization. The electronic medical record will be used to collect patient information, which will include: demographics (e.g. age, sex, height, weight), past medical history, medications prior to and during hospitalization, incidence of bleeding, additional procedures during the stay, and the total dose and indication for cangrelor use. The primary outcome of this study will assess the percentage of appropriate indications for the use of cangrelor according to this hospital's clinical practice guidelines, and identify opportunities for cost-savings in a large tertiary care teaching hospital. Using an outcomes database, this study also aims to compare the clinical outcomes of cangrelor use in our patient population, to clinical outcomes before its addition to formulary, in order to identify potential opportunities to improve patient care.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-016

Poster Title: Benefits of a clinical pharmacist in outpatient diabetes disease state management

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Purpose: Diabetes is a chronic disease state that has significant impact on patients. Pharmacists can have an integral role on a healthcare team providing patients with knowledge, resources, and support in the treatment of diabetes. Pharmacists have the unique ability to educate patients regarding proper use of their medications, self testing supplies, insulin administration, screen for drug interactions and make recommendations for lifestyle improvements, so that complications from diabetes can be delayed. The purpose of this study will be to evaluate the impact of pharmacist involvement in diabetes management in an ambulatory clinic, where there previously has been no pharmacist participation.

Methods: This study will be submitted to the Institutional Review Board and conducted in conjunction with the Endocrinology group in an outpatient clinic of a large tertiary care hospital. Patients will be identified through the electronic medical record system, referrals from outside clinics, and those referred from inpatient admissions for diabetic complications, to be seen for follow-up in an ambulatory outpatient diabetes clinic. The following data will be collected: age, gender, diagnosis, Hgb A1C, diagnostic lab results, medication regimens, compliance, physical exam findings, past medical history and readmission for complications of diabetes. Provider documentation from previous encounters will be reviewed to determine reasons for non-compliance, complications, and/or target A1C goals being missed. Medication regimens will be optimized; techniques for insulin administration and lifestyle modifications will be discussed. Patients will be educated on proper self-monitoring techniques and set up so their health care provider can electronically monitor their test results. Patients will be followed in an ambulatory clinic for 12 weeks by physicians, nurse practitioners, certified diabetic educators (CDE) and/or a pharmacist. The primary outcome measures will be (1) reduction of Hgb A1C and (2) reduction in hospital readmissions for diabetic complications. This study also aims to compare the clinical outcomes of diabetes management by a pharmacist compared to

outcomes before pharmacist involvement in order to identify the impact that can be made in improving patient care.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Evaluative Study

Session-Board Number: 8-017

Poster Title: Pharmacist-driven monitoring and education program for advanced breast cancer patients receiving palbociclib

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Purpose: Oral anti-cancer therapies are becoming increasingly common. Despite ease of administration in the outpatient setting, these agents are associated with potential toxicities and close monitoring is often required. A multi-disciplinary approach, which includes pharmacists in the care team for patients receiving oral anti-cancer therapy, may enhance adherence to therapy and its attendant recommended monitoring, and, ultimately, improve patient safety. The purpose of this pilot study is to evaluate the feasibility of a pharmacist-driven education and monitoring program for patients with advanced breast cancer receiving palbociclib along with endocrine therapy.

Methods: This is a single center, one arm, pilot study which will prospectively evaluate a pharmacist-driven education and monitoring program over approximately 6 months. Patients eligible to participate are those initiating or continuing treatment for locally advanced or metastatic breast cancer with palbociclib and endocrine therapy through the medical oncology clinic at the Johns Hopkins Kimmel Cancer Center at Sibley Memorial Hospital. Patients who provide consent may enroll after the study opens and prior to May 30, 2017. The institutional review board will review this study. A pharmacist will educate patients about potential palbociclib-associated toxicities and required laboratory monitoring while on treatment with palbociclib. The pharmacist will provide each patient with a specific treatment and laboratory calendar, follow-up on laboratory test results, and recommend dose adjustments in accordance with standard palbociclib treatment guidelines. Pharmacist recommendations will be based upon hematologic toxicity. Patients will complete a post-study satisfaction survey. The primary objective will be to evaluate patient adherence to pharmacist-recommended laboratory

monitoring. Secondary objectives will be to evaluate adherence to the pharmacist-recommended palbociclib schedule and to evaluate adherence to pharmacist-recommended palbociclib dose. Exploratory objectives will be to describe adherence to concomitant aromatase inhibitor or fulvestrant therapy, to evaluate patient satisfaction, to identify patient specific factors associated with adherence, and to describe the correlation between pharmacist-recommended and provider-recommended palbociclib dosing.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-018

Poster Title: Evaluation of the pharmacist's role in the management of drug-induced QTc prolongation in the inpatient setting at a community hospital

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Purpose: Delay in cardiac repolarization, (QTc prolongation) is a cause for concern in clinical practice, which untreated, can lead to the life-threatening occurrence of polymorphic ventricular tachyarrhythmia, also known as torsades de pointes (Tdp). Many medications have the potential to cause prolongation of the QTc interval, and even so combination of two or more QTc prolonging drugs have the potential to increase this risk even further. The objective of this study is to examine the opportunities for improving pharmacist monitoring of drug-induced QTc prolongation in an inpatient setting.

Methods: The electronic medical record system will be used to identify patients on four nursing units within the hospital that had high and or contraindicated drug-drug interaction QTc prolongation alerts, whether any interventions were made by the pharmacist due to those alerts and whether the alerts were overridden by the ordering physician. The following data will be collected: gender, patient age, patient nursing unit, prior to admission and inpatient medications, comorbidity status, laboratory data which will include potassium and magnesium levels, renal function and initial heart rate level. If available, results of baseline EKG status, and readings of QTc interval greater than 450 millisecond in men and QTc interval greater than 470 millisecond in women will be collected. Physician and pharmacist documentation will be reviewed to determine which interventions were made on the alerts and whether the alerts were overridden. The data will be recorded without patient identifiers. Data from patients with documented QTc interval greater than 450 millisecond in men and QTc interval greater than 470 millisecond in women will be reviewed to identify hemodynamic changes.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Descriptive Report

Session-Board Number: 8-019

Poster Title: Development of a pharmacy department standard operating procedure for intravenous to oral administration conversion of antimicrobial agents at a health maintenance organization hospital

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Purpose: The intravenous (IV) route provides many benefits for medication administration but also has many draw backs such as increasing risk of nosocomial infection, preparation and administration time, and cost (administration supplies and medications). Therefore, medications administered IV should be assessed and changed to oral (PO) administration as soon as clinically appropriate. This is especially true for antimicrobial agents, where IV to PO conversion is the simplest form of de-escalation. In addition, antimicrobial stewardship will soon be mandated by the Joint Commission and IV to PO conversion of antimicrobial agents is the first step to establishing a standard, hospital wide program.

Methods: Developing a standardized process for clinical pharmacists to convert antimicrobial agents from IV to PO began by reviewing current protocols and literature. Protocols from several other hospitals were reviewed to understand the necessary components of an IV to PO conversion protocol and the clinical pharmacist's role. A literature search was performed to identify inclusion and exclusion criteria of eligible and non-eligible patients. Pharmacokinetic information of formulary antimicrobial agents were also collected from the prescribing information of each medication. Antimicrobial agents were included if they were available in both IV and PO formulations, were on the hospital formulary, and had sufficient oral bioavailability. The identified patient criteria, convertible agents, and a proposed workflow were then formulated into a protocol describing the automatic conversion of IV to PO administration by clinical pharmacists. We solicited input from Infectious Disease physicians and other clinical pharmacists to further refine the protocol. After finalizing the protocol, it was submitted for review by the institution's Pharmacy Practice Committee (PPC), which decided

that the protocol should be implemented as a standard operating procedure (SOP) in lieu of a protocol.

Results: The protocol identifies inclusion and exclusion criteria of which patients qualify for IV to PO conversion. Patients ≥ 18 years of age who have a functioning GI tract, are hemodynamically stable, and are showing clinical signs of improvement are eligible for conversion. Patients unable to swallow or refuse anything PO, are not tolerating tube feedings, nothing by mouth (NPO) status, have malabsorption abnormalities, or are immunocompromised are not eligible for conversion. The formulary antimicrobial agents, eligible for conversion, and have sufficient oral bioavailability include azithromycin, ciprofloxacin, clindamycin, doxycycline, fluconazole, levofloxacin, linezolid, metronidazole, and moxifloxacin. Additional criteria to assess if a patient is declining or not responding to the PO therapy were also added for safety including increasing temperature and or white blood cell (WBC) count, becoming hemodynamically unstable, worsening signs or symptoms of infection, or unable to take medications PO. The PPC decided that the IV to PO conversion should be implemented as a SOP because the agreed upon workflow requires the pharmacist to first obtain permission from the supervising practitioner before proceeding with the conversion. Development of the protocol took approximately one month from inception to finalization of the SOP.

Conclusion: The resulting SOP for converting antimicrobial agents from IV to PO was the result of extensive literature review and input from multiple disciplines within the hospital. It will serve as a stepping stone for achieving the new antimicrobial stewardship standard by the Joint Commission and broaden the impact of clinical pharmacists in the hospital. This protocol will be implemented by the end of the year and the results of its impact will be presented at the Western States Conference for Pharmacy Residents.

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 8-020

Poster Title: Evaluating the use of ambulatory care clinical pharmacists (ACCPs) in assisting primary care providers (PCPs) with authorizing refill authorization requests (RARs) for chronic disease states

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Purpose: Primary care physicians (PCPs) are continuously interrupted by medication refill requests throughout the day with limited time to perform a comprehensive review before approving such requests. Many institutions and pharmacies have implemented refill clinics or collaborative protocols managed by nurses and/or community pharmacists with a primary goal of reducing physician workload. The refill authorization request (RAR) pilot program was designed to alleviate the burden on PCPs as well as address care caps by allowing ambulatory care clinical pharmacists (ACCPs) to review and authorize refill requests for anti-hypertensive, anti-hyperlipidemia, chronic gout, and anti-diabetic medications and supplies.

Methods: Primary care ACCPs were each assigned to a group of PCPs from 18 clinics under a collaborative protocol to assist in approving RARs for anti-hypertensive, anti-hyperlipidemia, chronic gout, and anti-diabetic medications and supplies in patients 18 years and older. A total of 139 physicians signed the protocol. In addition to assessing the clinical appropriateness of a RAR, ACCPs also addressed the need for an annual office visit, blood pressure check, and appropriate laboratory work. ACCPs made clinical and pharmacy related interventions. The primary outcome was a composite of care gap closures, which included completion of the annual office visit, blood pressure check, and laboratory work, both jointly and separately. Secondary outcomes included number of clinical interventions, pharmacy related interventions, average time taken to approve a RAR, and average time saved for the PCP. The program was initiated in April 2016 with full implementation to all clinics by August 2016. Data will be collected from January to December 2016 to capture the impact of this program.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-021

Poster Title: Drug utilization of intravenous acetaminophen in post operative patients

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Purpose: Intravenous acetaminophen is currently used for the management of acute postoperative pain in patients unable to take oral or enteral analgesics or injectable ketorolac. Intravenous acetaminophen should be restricted to post operative use up to 24 hours with dosage regimens for every-6-hour intervals in adults and children. The objective of this study is to determine whether patients who are given intravenous acetaminophen require less opiate medications and/or intravenous morphine usage.

Methods: A retrospective, observational study was performed via electronic chart review on post operative patients at Lafayette General Medical Center from July 1, 2015 to July 1, 2016 initiated on intravenous acetaminophen pre-opratively and/or post operatively. Concurrent opioid analgesic therapy was also documented from the medication administration record, if any, for these patients. A selected group of 30 patients that received only intravenous acetaminophen served as the control group for the medication utilization evaluation. The drug, strength, route of administration, and time of administration were all documented for each analgesic medication. In addition, the total amount of acetaminophen per day was calculated and documented. Also noted was length of stay, gender, age, ethnicity, and procedure for the total of 60 patients included in the medication utilization evaluation. An F-test and T-test was performed on select data for the medication utilization evaluation. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-022

Poster Title: Evaluation of argatroban use at a tertiary hospital

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Purpose: Argatroban is a direct thrombin inhibitor indicated for the treatment and prophylaxis of thrombosis in patients with suspected or confirmed heparin induced thrombocytopenia (HIT). Argatroban dosing is weight-based, with initial doses of 2 micrograms/kilogram/minute, and requires strict monitoring to achieve therapeutic efficacy and avoid bleeding. Studies have shown that critically ill patients and those with liver or multi-organ dysfunction require much lower initial doses ranging from 0.5-1.2 micrograms/kilogram/minute. The purpose of this study is to evaluate the safety, as well as the appropriateness of dosing and monitoring of argatroban at our institution.

Methods: This is a single center, retrospective, drug-use evaluation study approved by the Institutional Review Board. Patients aged 18 years or older with a diagnosis of suspected or confirmed heparin-induced thrombocytopenia with or without thrombosis, treated with argatroban for at least 24 hours, and admitted to hospital for at least 24 hours were included. Data will be collected from the electronic medical record. Data collection will include patient baseline characteristics, admission location (intensive care unit (ICU) versus non-ICU units), liver and multi-organ dysfunction, indication for argatroban, appropriate diagnosis of HIT, initial argatroban infusion dose, duration of argatroban therapy, and adherence to the institution's nomogram. The primary outcome is maintenance argatroban dose to achieve two consecutive therapeutic partial thromboplastin times (aPTT). Secondary outcomes include: time to achieve therapeutic aPTT, percent of subtherapeutic and supratherapeutic aPTTs, bleeding events, and thrombosis events.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-023

Poster Title: Use of erythropoietin in kidney or liver transplant recipients

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Purpose: The use of erythropoietin is common in chronic renal failure patients; however, there is a lack of data to support its place in therapy for patients after receiving a kidney or liver transplant. Currently, at our institution there is no standard protocol to administering erythropoietin to solid organ transplant patients in both the inpatient and outpatient setting. This study intends to describe the use of erythropoietin over two years in order to assess the necessity of a protocol for erythropoietin use in solid organ transplant.

Methods: This is a single center, retrospective descriptive study including patients greater than 18 years of age who received erythropoietin from July 1, 2014 to July 1, 2016 with a history of a kidney, liver, or combined kidney-liver transplant. Currently, there is no specific protocol that our institution uses to determine how to administer erythropoietin for patients with post-transplant anemia.
Data will be collected from the electronic medical record. The primary outcome is to determine the number of patients who appropriately received erythropoietin at the correct dose. Secondary outcomes include determining patients who received oral iron therapy, thromboembolic events at any point post erythropoietin dose, blood pressure monitored pre-dose and held if patient is hypertensive, blood pressure monitored post dose, mortality, blood transfusions, cardiovascular events, and duration of erythropoietin administration. Appropriate use of erythropoietin was defined as pre-dose blood pressure that would not contraindicate administration in addition to the correct dose based on body weight. Hypertension pre-dose requiring dose to be held was defined as systolic blood pressure greater than 170 mmHg or diastolic blood pressure greater than 90 mmHg. Anemia was defined as a hemoglobin level less than 10 grams per deciliter or symptomatic requiring blood transfusions.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-024

Poster Title: Comparison of outcomes with vancomycin or metronidazole for Clostridium difficile associated diarrhea among solid organ transplant recipients

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Purpose: Clostridium difficile associated diarrhea (CDAD) is a rising nosocomial infection associated with increased morbidity and mortality. Solid organ transplant (SOT) recipients have been observed to have both higher rates and worse outcomes of CDAD compared with the general population. Currently, the standard of care for mild to moderate CDAD in the general population is metronidazole. However, literature among the SOT population is limited. The objective of the study is to assess efficacy outcomes comparing metronidazole or oral vancomycin therapy in adult SOT recipients with mild to moderate CDAD.

Methods: This is a retrospective cohort study of adult SOT patients diagnosed with their first occurrence or first recurrence of mild to moderate CDAD between June 1, 2012 and May 31, 2016 and received at least 48 – 72 hours of metronidazole or oral vancomycin therapy. Patients who initially received combination oral vancomycin and oral/intravenous metronidazole or those who died within 48 hours of the positive C. difficile result will be excluded. The primary outcome is the rate of treatment failure in patients receiving metronidazole compared to those receiving oral vancomycin. Treatment failure is defined as no resolution or improvement in baseline diarrhea by day three or change off of therapy due to worsening diarrhea. The secondary outcomes are the rate of all-cause mortality, recurrence within 30 days and 90 days, vancomycin-resistant enterococci (VRE) positive results within 90 days of positive C. difficile test, and CDAD complications. A subgroup analysis will be performed for secondary outcomes in patients who received at least 70 percent of their treatment with metronidazole compared to oral vancomycin.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-025

Poster Title: Effect of a pharmacist-led medication discharge education program on the 30-day readmission rate of indigent patients undergoing coronary artery bypass graft or valve replacement surgery

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Purpose: Transitioning between health care settings is associated with increased medication errors and adverse drug events. Previous studies have demonstrated that discharge education can reduce medication errors and readmission rates in hospitalized patients. Because indigent patients have a higher risk of readmission and cardiac surgery patients are often initiated on many new medications, this population is a particularly important target for a discharge education program. The primary objective of this study is to compare 30-day all cause readmission rates in indigent patients undergoing cardiac surgery who received discharge medication education versus patients who did not receive discharge medication education.

Methods: This single center, retrospective chart review of patients admitted to Our Lady of the Lake Regional Medical Center from June 2016 to December 2016 will compare the 30-day readmission rates for the 3 months prior to re-initiation of a discharge education program to the 3 months after. Patients will be identified through the Society of Thoracic Surgeons (STS) database information collected by the hospital and subsequently stratified into two groups based on initial admission date. Inclusion criteria include self-pay and Medicaid patients undergoing coronary artery bypass graft or valve replacement surgery. All information will be collected using the STS database and the hospital's electronic health record. Information to be collected includes patient demographic information, relevant past medical history, payor status, type of surgery, date of admission, hospital readmission date and reason (if applicable), and discharge medication list. Data will be de-identified and maintained confidentially. Results of this study will be summarized using descriptive statistics. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-026

Poster Title: Does low dose vecuronium provide adequate paralysis without the need for re-dosing in pediatric patients undergoing RSI compared to high dose vecuronium?

Primary Author: Danielle Thomas, Our Lady of the Lake Regional Medical Center, LA; **Email:** danielle.thomas@ololrmc.com

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Purpose: Vecuronium is a neuromuscular blocking agent commonly used in rapid sequence intubation (RSI). While not considered a first line agent, it has been shown to be safe and effective. In contrast to other agents, vecuronium is devoid of cardiovascular side effects making it a favorable option. Unfortunately, there no widely accepted guidelines and the dose of vecuronium used during RSI can range from 0.1 to 0.4mg/kg. The purpose of this study is to determine if low dose vecuronium, 0.1mg/kg, provides adequate paralysis without the need for re-dosing in pediatric patients undergoing RSI compared to high dose vecuronium, 0.2mg/kg.

Methods: This retrospective review will be submitted to the Institution Review Board for approval. The electronic medical record system will identify pediatric patients who underwent RSI and received vecuronium as the neuromuscular blocking agent. The study will evaluate whether low dose vecuronium provides adequate paralysis without the need for re-dosing compared to high dose vecuronium. The following data will be collected: patient age, gender, indication for RSI, type of physician providing intubation, past medical history, current medications, vecuronium dose, the number of doses given, and intubating outcomes. If available, blood pressure and heart rate prior to and after intubation will be collected. The dose of vecuronium will be calculated using the patient's actual body weight. Patient's electronic medical record will be evaluated from the date of admission to discharge and all data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 8-027

Poster Title: Impact of alvimopan with or without liposomal bupivacaine on length of stay and opioid

utilization in colorectal surgery patients

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Purpose: Opioid utilization postoperatively for colorectal surgery provides acute pain relief, but is associated with complications such as postoperative ileus (POI). Alvimopan, a mu-opioid receptor antagonist, works to prevent POI by blocking opioid gastrointestinal effects, without antagonizing central analgesia. Liposomal bupivacaine (LB), indicated for single-dose administration into the surgical site after the procedure, provides local postoperative analgesia. Alvimopan alone has been studied in colorectal patients, however the impact of alvimopan with LB is unknown at our institution. The purpose of this study is to evaluate alvimopan with or without LB on postoperative outcomes of colorectal surgery.

Methods: This retrospective, single-center study will compare the impact of alvimopan with and without liposomal bupivacaine on postoperative outcomes, including postoperative length of stay, total hospitalization costs, and opioid consumption. Patients will be identified by generating a financial report with specific diagnosis-related group (DRG) codes who received alvimopan in 2013-2016. DRG codes 329, 330, and 331 will be included to cover all major small and large bowel procedures with and without comorbid complications. Analysis will be limited to colorectal procedures by previously identified surgeons. Adult patients shall not be included in the study more than once. Charts with incomplete information will be excluded. Included patients will be divided into DRG code and then further into treatment groups. The primary outcome is to determine the difference in postoperative length of stay, rounded up in days. Postoperative opioid use will be converted to morphine equivalents using a standard opioid

equianalgesic chart. Opioid charges will be obtained through a financial report. Findings will assist in order set and formulary management.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-028

Poster Title: Development of a comparative HIV community viral load map for the Greater New Orleans area

Primary Author: Victoria Nguyen, PGY 1 Internal Medicine and Acute Care Pharmacy Practice Resident, Xavier University of New Orleans College of Pharmacy and University Medical Center, LA; **Email:** vnguye26@xula.edu

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Purpose: Louisiana has the second highest rate of HIV diagnoses, with New Orleans accounting for a significant portion of this burden. Achieving viral suppression in HIV-positive patients has been shown to significantly reduce transmission. The website, www.AIDSVu.org has developed an interactive map of HIV incidence in the United States. Thus, our primary outcome is to determine if a correlation exists between HIV community viral load and HIV incidence in the Greater New Orleans area. We will also seek to compare the HIV community viral load according to: retention-in-care, age, gender identity, and race/ethnicity.

Methods: This study has been submitted to the Xavier University of Louisiana Institutional Review Board for approval. This is a multi-center geo-mapping study. Using geographic information system (GiS) technology, we will generate a HIV community viral load map, by zip code. This map utilize data collected from the electronic health records (EHRs) of Ryan White HIV clinics in the Greater New Orleans area between January 1, 2015 and December 31, 2015. Analytic dataset derived from EHRs will be stripped of all personal identifiers to ensure confidentiality. The study sample will be divided into two groups: retention in-care patients (defined as a patient who is in continuous care for at least two visits, at least three months apart, within a twelve-month period) versus non-retention in-care patients. The primary outcome measure will be the latest HIV viral load. Patient's zip code will be the primary exposure factor. Other exposure or confounding factors are: all viral loads of 2015, age, gender identity and race/ethnicity. Descriptive statistics will be performed to describe sample

characteristics. The relation between HIV viral load and incidence will be determined using correlation analysis. Two sample independent t-tests or analysis of variance (depending on the level of categorization of independent variables) will performed to assess differences in viral load relative to the exposure factors. Statistical tests will be performed at 0.05 significance level using SAS 9.4.1.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-029

Poster Title: Efficacy and cost analysis of a tbo-filgrastim protocol for stem cell engraftment in autologous stem cell transplant.

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Purpose: To compare median number of days to engraftment with changes in granulocyte-colony stimulating factor medication and start date of granulocyte-colony stimulating factor based on changes in standard operating procedures (SOP).

Methods: This is a retrospective chart review of approximately 75 patients. Adult patients 18 years of age and older and 79 years of age or less who received an autologous stem cell transplant with stem cell engraftment therapy between January 1, 2015 and December 31, 2016 at University Health System will be included. Patient information will be assessed to determine conditioning regimen, stem cell dose and how many days it took to collect stem cells, plerixafor use, stem cell engraftment therapy, dose and number of granulocyte colony stimulating factor received, how many days it takes until the absolute neutrophil count stays above 500 for 3 days and 1500 for 2 days, if granulocyte colony stimulating factor was restarted, any fever, intravenous antibiotic use and duration of use. The length of hospital stay, and intensive care unit stays will also be collected.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-030

Poster Title: Effect of appropriate weight based vancomycin dosing in the emergency department on time to therapeutic trough

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Purpose: Current vancomycin guidelines recommend administering a weight based loading dose (25-30 mg/kg) followed by a maintenance dose (15-20 mg/kg) for critically ill patients to provide therapeutic trough levels between 15-20 mg/L. Patients with vancomycin trough less than 10 are at increased risk of their bacterial infection becoming resistant to vancomycin. In the emergency department initial vancomycin dosing is often not the recommended 15-20 mg/kg. This study will evaluate the time to therapeutic trough and hospital length of stay for critically ill patients initiated on doses greater than or equal to 15 mg/kg and those who were not.

Methods: This study is approved by the Institutional Review Board. Patients included are those that received vancomycin in the emergency department for suspected bacteremia, meningitis, pneumonia, or skin soft tissue infection (excluding cellulitis). Data collection will include: age, gender, weight, height, BMI, serum creatinine, baseline calculated creatinine clearance, diagnosis/suspected infection, initial weight based vancomycin dose, first vancomycin trough, hospital length of stay, admission unit, administration and trough times of vancomycin, adverse outcomes such as death, kidney failure/dialysis, and acute kidney injury, and other potentially intravenous nephrotoxic medications administered including piperacillin-tazobactam, amphotericin, IV contrast, and acyclovir. Descriptive statistics will be used to compare baseline patient variables. Chi-squared testing will be used for nominal data, and student's t-test will be used to measure continuous data.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-031

Poster Title: A standardized vancomycin dosing protocol in a neonatal intensive care unit

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Purpose: Standardized dosing of vancomycin in neonatal patients is limited by differences in pharmacokinetics and possibility of nephrotoxicity. The objective of this study is to determine whether a vancomycin dosing protocol implemented in a neonatal intensive care unit was effective to achieve target vancomycin trough concentrations. Secondary endpoints include the time it took to achieve target concentrations from the first dose give, area-under-the-curve per 24 hours, and whether nephrotoxicity occurred.

Methods: This study has been submitted for Institutional Review Board approval. This is a retrospective review of patient charts between January 2013, when the vancomycin dosing protocol was implemented, and July 2016. Charts reviewed include patients admitted to the neonatal intensive care unit who received vancomycin intravenous and had a level obtained for monitoring. Those excluded include patients receiving vancomycin without a corresponding vancomycin level and those on extracorporeal membrane oxygenation. The following data will be collected: medical record number, age, height/length, weight, diagnosis, cultures with sensitivities, serum creatinine, urine output, vancomycin dose, vancomycin dosing interval, time of vancomycin dose, vancomycin trough levels, time vancomycin trough level was taken, and medications that could potentially cause nephrotoxicity. Data collected will be used to determine whether target trough was achieved, the time to target trough in hours, and the average area-under-the-curve per 24 hours of the doses used. For safety, serum creatinine and urine output will be evaluated to determine if nephrotoxicity changed with the protocol.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-032

Poster Title: Evaluating and assessing readmission rates among pediatric patients in an academic medical center

Primary Author: Stephanie Hatten, University Health Shreveport, LA; **Email:** stephanie.hatten@uhsystem.com

Additional Author (s):
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Elizabeth Lafitte
Christopher Selby
Kelsey Trimble

Purpose: The objective of this study is to determine parallels among pediatric patients who are readmitted to the hospital. Using information gathered through comparing patients with frequent readmissions, including disease state, mismanagement of medications by the caregiver, and infection at the time of admission, high risk populations that may benefit most from pharmacist education prior to discharge or in the outpatient setting will be identified.

Methods: This study has been approved by the Institutional Review Board. Patients eligible for retrospective chart review will meet the following criteria: age 0-18, admitted January 1, 2013 to January 1, 2015. Patient data will be collected via the electronic medical record system. The following data will be collected for each patient meeting inclusion criteria: patient medical record number, age, reason for readmission, initial admission date, admitting diagnosis, payor status, number of clinic visits, number of readmissions within one year of admission date, length of stay, and pertinent labs,. The patient's outpatient medication history including the use of compounded versus manufactured medication and where the patient normally fills their outpatient prescriptions will also be collected. Readmission types will be stratified into the following categories: (1) general disease state exacerbation, (2) infection, (3) medication induced illness/ exacerbation. All collected data will be maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-033

Poster Title: Comparison of Posaconazole vs. Voriconazole in the Induction of Acute Myeloid Leukemia: Impact on Cost, Safety, and Efficacy

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Additional Author (s):
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Purpose: University Health Shreveport switched from using posaconazole to voriconazole for the prevention of invasive fungal infections in patients with acute myeloid leukemia (AML) undergoing intensive chemotherapy in February 2016. Currently, there are no studies comparing the cost effectiveness of posaconazole to voriconazole in reducing invasive fungal infections in this patient population. Therefore, the purpose of this study is to compare the cost of posaconazole to voriconazole in patients with AML undergoing intensive chemotherapy, in addition to the incidence of adverse effects and reduction of invasive fungal infections.

Methods: This is a single-center, retrospective chart review of patients with AML receiving voriconazole or posaconazole for prevention of invasive fungal infections. Quality improvement status was granted by the Institutional Review Board prior to data collection. Patients with AML will be included if undergoing intensive induction chemotherapy and received voriconazole or posaconazole as the primary antifungal prophylactic agent. Medical record numbers of patients with AML who underwent intensive induction chemotherapy from February 2015 to February 2017 will be obtained. The following data will be collected from the patient's chart: age, gender, admission date, inpatient length of stay in days, prescribed inpatient antifungal, dose, route, frequency, dosage form, duration, chemotherapy regimen initiated, liver function tests, serum creatinine, signs and symptoms of visual disturbances, EKG readings, electrolytes including potassium, magnesium and calcium, fungal cultures or suspected fungal infection, death and if so, cause. The cost of medication therapy will be determined in US dollars by the acquisition cost at the time of purchase of voriconazole and posaconazole. Statistical analyses will be completed for all objectives using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-034

Poster Title: An evaluation of the accuracy of allergy assessments in the inpatient setting

Primary Author: Alyssa Simpson, University Health Shreveport, LA; **Email:** alyssa.simpson@uhsystem.com

Additional Author (s):
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Ashley Sadowy
Kathryn Astle

Purpose: This purpose of this project is to investigate the high number of penicillin allergies lacking reaction descriptions. The primary objective of this study is to evaluate the accuracy of a non-pharmacist provider obtained allergy history. The secondary objectives are to determine the number of clarifications made due to the allergy and the average time spent by a pharmacist clarifying the allergy.

Methods: This is a single-center, prospective quality improvement study. The electronic health record will be used to identify patients age 18 to 89 years admitted to University Health Shreveport between September 1, 2016 –June 30, 2017 with a reported penicillin allergy. Patients who have more than five allergies listed in the health record or an allergy assessment already completed by a pharmacist will be excluded. Prisoners, children, pregnant women, and patients who cannot verbally provide an allergy history will also be excluded. Patients meeting the criteria will have an allergy assessment completed by a pharmacist. A questionnaire will be utilized to help standardize the assessment process, and answers to the questionnaire will be recorded into a password-protected spreadsheet to organize the data collected from the patients. This allergy assessment will be updated in the patients' electronic health record and compared to the documented history currently on file. The following data will be collected: patient medical record number, age, gender, date allergy entered, medication causing reaction, reaction description, reaction onset, other beta-lactams taken, allergy category, number of previous I-vents related to this allergy, time spent clarifying, and other antibiotics used. The data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-035

Poster Title: Factors associated with early discontinuation of long-acting reversible contraceptives in a community teaching facility

Primary Author: Emily Allen-Vieira, Woman's Hospital, LA; **Email:** emilyallenvieira@gmail.com

Additional Author (s):
Fancy Manton

Purpose: Long-acting reversible contraceptives (LARCs) are highly recommended by The American College of Obstetrics and Gynecology for most women. The Contraceptive CHOICE Project reports that compared to other methods, these devices have a high satisfaction rate and are associated with decreased unintended pregnancies. Occasionally, however, patients may request early removal of these devices. The goal of this study is to identify factors affecting early discontinuation of LARCs in the local community.

Methods: This study will be submitted to the Institutional Review Board for approval. To determine study population, the electronic medical record will be accessed using ICD 9 and 10 codes for intrauterine device and implant (i.e. LARC) removals at Woman's Hospital. We will further condense the data to identify early removal of LARCs, defined as removal less than one year after insertion not related to expulsion. Once these patients are identified, charts will be thoroughly reviewed and the following will be recorded: reason for removal, product name, and timing of insertion from delivery (if applicable.) Additional information regarding patient demographics, number of pregnancies, educational level, etc. will be collected to determine influence on removal rates. All data will be recorded without patient identifiers and maintained confidentially. This information will be thoroughly analyzed by a team of clinicians including pharmacists, physicians, and a statistician to determine discontinuation rates and factors associated with early removal of LARCs.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-036

Poster Title: Patients' perspective on pharmacists' role as a sexually transmitted infection provider for gonorrhea, chlamydia, and trichomoniasis in an ambulatory care setting

Primary Author: Esther Okoro, Xavier University of Louisiana, LA; **Email:** eokoro@xula.edu

Additional Author (s):
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Kristi Rapp

Purpose: Although preventable, sexually transmitted infections (STIs) affect one million people daily. The highest prevalence rates among STIs, gonorrhea, chlamydia, and trichomoniasis, affect over 300 million people annually. While studies demonstrate effective pharmacist-led management of chronic diseases, it is unclear how patients perceive pharmacists beyond being viewed as "drug experts". Based on a need for more innovative STIs prevention strategies, limited data showing the benefits of pharmacists providing sexual health education in STIs, and pharmacists' effectiveness in managing chronic diseases; this study is designed to assess and understand patients' views on pharmacists serving as STI providers for gonorrhea, chlamydia, and trichomoniasis.

Methods: This prospective mixed method study will be submitted to the Institutional Review Board for approval. Fifty patients will be recruited from targeted medically underserved Federally Qualified Health Centers. Inclusion criteria: sexually active adults, ages 18 to 50 years, obtain informed consent. Phase I (Quantitative Study) will include the administration of a survey which will identify patients' knowledge on pharmacists as healthcare providers, views on pharmacists as sexual health STI providers, patients' sexual history (i.e. diagnosis of gonorrhea, chlamydia, and trichomoniasis), and patients' knowledge on STIs. The survey instrument is an adaptation of sexual risk of patients and instruments that measures perception of pharmacists viewed as healthcare and STI providers. Phase II (Qualitative Study) will involve focus groups to ascertain context to the pattern of perception of the study sample relative to pharmacists serving as providers in sexual health management and education of STIs. The focus group data will be audio-recorded and transcribed. All data collected will be confidential and will not provide patient identifiers. Descriptive statistics, t tests, chi square tests, analysis of variance

and regression analysis will be performed. All statistical tests will be performed at 0.05 significance level using SAS 9.4.1. Content analysis of the qualitative data will be performed to ascertain emerging themes relative to the role of pharmacists as STI providers.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-037

Poster Title: Estimates and Determinants of cure rates of sofosbuvir and ribavirin (SOF/RBV) in patients with Hepatitis C (HCV) genotype 2 & 3

Primary Author: Paa Kwesi Yanful, Xavier University of Louisiana, LA; **Email:** pyanful@xula.edu

Additional Author (s):
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Purpose: Until July 2016, SOF/RBV remained acceptable for treating HCV genotype 2 and 3, based on demonstrated clinical trial cure rates (sustained virologic response [SVR12]) of 56-97%. However, the diversity in populations represented in these trials has been limited. Additionally, previous investigations have not explored the potential impact of baseline depression on SVR12 in patients treated with SOF/RBV. Thus, the objective of this study is to compare the SVR12 of genotype 2 versus genotype 3 patients treated with SOF/RBV at the University Medical Center New Orleans Hepatitis Clinic and to determine if depression, race and insurance status are correlates of SVR12.

Methods: This single-center, retrospective analytic study has been submitted to the Xavier University of Louisiana Institutional Review Board for approval. The study sample will include all genotype 2 and 3 HCV patients treated with SOF/RBV at the clinic. The primary outcome measure is sustained virologic response at 12 week (SVR12). This measure will be determined by HCV viral load < 25 IU/mL at ≥12 weeks following completion of treatment. Exposure measures will include age, race, gender, insurance type, baseline depression assessed using either patient health questionnaire (PHQ-2) score, ICD-9/10 codes for depression (as applicable) or concomitant antidepressant therapy. The abstracted analytic dataset will be stripped of all personal identifiers to ensure confidentiality. Descriptive statistics will be used to describe baseline characteristics and to estimate SVR12 rates of genotype 2 and 3 patients. The study estimated SVR12 rates will be compared to SVR12 rates estimated from clinical trials using a z-test. Two-sample t-tests or chi-square tests will be used to compare selected exposure variables

(baseline depression, race, and insurance status) and SVR12 rates between genotype 2 and 3 patients. All statistical tests will be performed at a significance level of 0.05 using SAS 9.4.1.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-038

Poster Title: Implementation of the proposed Medicare diabetes prevention program: a retrospective analysis of revenue increase based on pharmacist-led interventions

Primary Author: Erica Watson, Xavier University of Louisiana College of Pharmacy, LA; **Email:** ericawatson16@gmail.com

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Purpose: Diabetes is growing at an exponential rate in both the United States and Louisiana. Individuals with prediabetes are at higher risk for the development of diabetes, resulting in poor health outcomes and increased healthcare costs. Studies have shown that implementation of the Medicare diabetes prevention program (MDPP) has resulted in the delayed development of diabetes and led to the adoption of a new provider payment scheme. Our primary objective is to assess the revenue generated from pharmacist-led interventions upon implementation of the MDPP. The study will also assess the development of diabetes in high-risk individuals who are receiving pharmacist-led care.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify prediabetic patients that are receiving pharmacist-led care. Prediabetes will be defined as a hemoglobin A1C test with a value between 5.7% and 6.4%, or fasting plasma glucose of 100-125 mg/dL, or a 2-hour post glucose challenge of 140-199 mg/dL (oral glucose tolerance test). The following data will be collected: age, gender, race/ethnicity, body mass index (BMI), weight, blood pressure, hemoglobin A1C, current medications, average adherence to clinic visits/number of visits attended, and co-morbid conditions. If available, occupation and educational level will also be obtained. All data collected will be over an 18-month time period, from initial referral to pharmacist. All data will be recorded without patient identifiers and maintained confidentially. The data will then be evaluated to determine those individuals who have attended the appropriate number of sessions and achieved at least 5% body weight loss. Estimated revenue will be determined utilizing the Centers for Medicare & Medicaid Services reimbursement rates. The primary outcome measure is cost in dollars. The data for all patients regardless of weight loss or

sessions attended will be assessed to determine if they developed diabetes while receiving pharmacist-led care.

Results: N/A

Conclusion: N/A

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-039

Poster Title: Assessing patients' improvement in diabetes numeracy skills after one pharmacist-led educational session

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Additional Author (s):
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Purpose: Numeracy is an important element of literacy and is defined as the ability to understand and use numbers in everyday life. Having adequate numeracy skills is crucial in diabetic patients to interpret glucometer results, properly administer medications, and adhere to diabetic diet; and pharmacists can intervene in these three areas. Previous studies assessed numeracy skills of patients enrolled in a long-term diabetes program and showed that patients with higher numeracy scores tend to have better glycemic control. The objective of this study is to determine if one educational session with the pharmacist will improve numeracy skills.

Methods: This single-center, prospective, pre-and post-intervention study will be submitted to the Institutional Review Board for approval and will be conducted in a community setting. The study sample will include patients at least 18 years old with Type 1 or 2 diabetes who take at least one diabetic medication. Patients who have a corrected visual acuity of 20/50 or greater as determined using Rosenbaum pocket screener will be excluded. The validated Diabetes Numeracy Test-5 (DNT-5) is a 5-item survey that assesses nutrition, exercise, blood glucose monitoring, and medication use. Study participants, at baseline, will be administered the DNT-5 survey. In addition to the DNT-5, the following data will be ascertained: age, gender, race/ethnicity, income, comorbid conditions, duration of diabetes, previous diabetes education, and list of medications. Patients will participate in an education session that covers modules from the Diabetes Literacy and Numeracy Toolkit corresponding to the DNT-5. Patients will retake the DNT-5 as a post-test. All data will be recorded without patient identifiers and maintained confidentially. Paired T-test will be used to assess changes in DNT-5 scores pre- and

post-intervention. Analysis of Variance will be used to compare DNT-5 scores adjusted for factors mentioned above. All statistical tests will be performed at a significance level of 0.05 using SAS 9.4.1.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-040

Poster Title: Describing and quantifying opioid prescribing patterns in acute respiratory distress syndrome patients

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Additional Author (s):
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Purpose: Acute respiratory distress syndrome often requires prolonged sedation, intubation, and intensive care hospitalization. It is associated with high mortality and morbidity, and patients may endure chronic pain that persists long after hospital discharge. Opioid overdose is an epidemic, with the majority of overdose-related deaths involving prescribed opioids in the United States. There is limited information available that describes opioid use in these patients during and after their acute critical illness. The objective of this study is to describe the patterns of opioid use in acute respiratory distress syndrome patients.

Methods: Prior to the start of this study, the study protocol will be submitted to both the Xavier University College of Pharmacy Institutional Review Board and the Research Review Committee for approval. This is a single-center, retrospective, chart review, descriptive study. This study will include all patients meeting the inclusion criteria who are on the University Medical Center New Orleans' electronic medical record from July 2015 through December 2016. Included patients are those who are 18 years of age or older, admitted in the ICU and diagnosed with acute respiratory distress syndrome (ARDS) with the ICD9 diagnosis code of 518.82 or the ICD10 diagnosis code of J80, and received opioids during their encounter. The primary outcome of this study is to describe opioid requirements and prescribing patterns in patients with ARDS across their transitions between various levels of care. The secondary outcome of this study is to describe the number and characteristics of patients discharged with prescriptions for outpatient opioid use.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-041

Poster Title: Discharge prescribing trends of benzodiazepines for anxiety in emergency departments in the United States.

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Additional Author (s):
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Brittany Raymond

Purpose: Anxiety disorders are the most common class of mental health conditions in the United States (US) with an estimated lifetime prevalence of 18 percent. In the US approximately 26 percent of mental health cases seen in emergency departments (EDs) are related to anxiety disorders. While benzodiazepines are not recommended as first line treatment for anxiety, their use has been increasing with an estimated 1 in 20 US adults in 2008 filling a benzodiazepine prescription. There is little research on management of anxiety at ED discharge. This study's purpose was to assess prescribing trends of benzodiazepines for anxiety upon ED discharge.

Methods: To answer the research question, 2011 National Hospital Ambulatory Medical Care Survey (NHAMCS) data were examined using bivariate and multivariate techniques. NHAMCS is designed to collect data on the utilization and provision of ambulatory care services in hospital EDs from a national sample of ED visits. The survey instrument is the Patient Record form. ED staff is instructed to complete Patient Record forms for a systematic random sample of patient visits during a randomly assigned 4-week reporting period. Data are obtained on demographic characteristics of patients, expected source(s) of payment, patients' complaints, diagnoses, diagnostic/screening services, procedures, medication therapy, disposition, types of providers seen, causes of injury, and certain characteristics of the facility, such as geographic region and metropolitan status. The study population included US male and female adults 18-80 years of age presenting to the ED with the diagnosis of anxiety (ICD-9 Code 300.0 and 300.02). The dependent variable was receipt of benzodiazepine prescription on discharge. The covariates or

independent variables were: geographic locale, patient sex, race/ethnicity, patient residence, visit disposition, and health insurance status. Statistical Package for Social Scientists (SPSS, IBM, Chicago, version 24.0) was used to conduct the analyses. The Institutional Review Board (IRB) at the researchers' institution does not require human subject's oversight for the analysis of de-identified data.

Results: NA

Conclusion: NA

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-042

Poster Title: Intentional opiate overdose: a population based cross-sectional study of disparities in patients presenting to an emergency department in the United States

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Additional Author (s):
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Purpose: The National Center for Health Statistics (NCHS) reported that the rate of deaths involving opioid analgesics in the United States (US) increased from 1.5 per 100,000 in 2000 to 5.9 per 100,000 in 2014. This increase is coupled with the fact that 40 percent of all drug-poisoning deaths involved opioid analgesics, equating to 18,893 deaths in the US. Little research has been conducted examining intentional overdoses involving opiates. The aim of this study was to ascertain if population disparities exist for patients who present to emergency departments (ED) due to intentional opiate overdose.

Methods: To answer the research question, 2011 National Hospital Ambulatory Medical Care Survey (NHAMCS) data were examined using bivariate and multivariate techniques. NHAMCS is designed to collect data on the utilization and provision of ambulatory care services in hospital EDs. Data are collected from a national sample of ED visits. ED staff is instructed to complete Patient Record forms for a systematic random sample of patient visits during a randomly assigned 4-week reporting period. Data are obtained on demographic characteristics of patients, expected source(s) of payment, patients' complaints, diagnoses, diagnostic/screening services, procedures, medication therapy, disposition, types of providers seen, causes of injury, and certain characteristics of the facility, such as geographic region and metropolitan status. The study population for this research was male and female adults aged 18 to 80 years presenting to an ED for overdose of opiate and/or related narcotics (ICD-9 Code 965.09). Opiate and/or related narcotic overdose was the dependent variable for this research study. The covariates or independent variables were: geographic locale, patient sex, race/ethnicity, patient

residence and health insurance status. Statistical Package for Social Scientists (SPSS, IBM, Chicago, version 24.0) was used to conduct the analyses. For all analyses' alpha was set at less than or equal to 0.05. The Institutional Review Board at the researchers' institution does not require human subject's oversight for analysis of de-identified data.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-043

Poster Title: Are there population disparities in the receipt of tissue plasminogen activator (tPA) among adults presenting to an emergency department **(**ED) with acute ischemic stroke?

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Additional Author (s):
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Purpose: Stroke is the leading cause of long-term adult disability. The first line of therapy for acute ischemic stroke treatment is tissue plasminogen activator (tPA) to resolve the thrombus and restore blood flow. Those who receive treatment within 60 minutes of presentation are more likely to avoid the disabling effects of stroke and have decreased mortality. A recent study suggested that only an estimated 27 percent of stroke victims receive tPA within 60 minutes. Our research question is: Are there population-related disparities in receipt of tPA in the United States (US) among adults presenting to an ED with acute ischemic stroke?

Methods: To answer the research question, 2011 National Hospital Ambulatory Medical Care Survey (NHAMCS) data were examined using bivariate and multivariate techniques. NHAMCS is designed to collect data on the utilization and provision of ambulatory care services in hospital EDs. Data are collected from a national sample of ED visits. The survey instrument is the Patient Record form. ED staff is instructed to complete Patient Record forms for a systematic random sample of patient visits during a randomly assigned 4-week reporting period. Data are obtained on demographic characteristics of patients, expected source(s) of payment, patients' complaints, diagnoses, diagnostic/screening services, procedures, medication therapy, disposition, types of providers seen, causes of injury, and certain characteristics of the facility, such as geographic region and metropolitan status.
The study population for this research was US male and female adults 18 to 80 years of age presenting to an ED with acute ischemic stroke (ICD-9 434.91). The dependent variable for the analyses was receipt of tPA (NHAMCS drug codes: 01032, 03371, 00486). The covariates or

independent variables for this research study were: geographic locale (rural/non-rural), patient sex, race/ethnicity (Caucasian/non-Caucasian), and health insurance status (insured/noninsured). Statistical Package for Social Scientists (SPSS, IBM, Chicago, version 24.0) was used to conduct the analyses. The Institutional Review Board (IRB) at the researchers' institution does not require human subject's oversight for the analysis of de-identified data.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-044

Poster Title: Are patients presenting to emergency departments with ST Elevated Myocardial Infarctions (STEMI) in the Unites States receiving heparin before admittance to a hospital unit?

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Additional Author (s):
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Purpose: Approximately 735,000 heart attacks occur every year in the United States (US). About 70 percent of these are ST Elevated Myocardial Infarctions (STEMI) which occurs when one of the major arteries that supply oxygen to the heart becomes completely occluded leading to heart muscle death. The sooner the occlusion can be fixed, the less heart muscle will die with possible better outcomes for the patient. Current guidelines suggest giving heparin products in the emergency department (ED) before hospital admission. The purpose of this research was to assess adherence to STEMI guidelines.

Methods: To answer the research question, 2011 National Hospital Ambulatory Medical Care Survey (NHAMCS) data were examined using bivariate and multivariate techniques. NHAMCS is designed to collect data on the utilization and provision of ambulatory care services in hospital EDs. Data are collected from a national sample of ED visits. The survey instrument is the Patient Record form. ED staff is instructed to complete Patient Record forms for a systematic random sample of patient visits during a randomly assigned 4-week reporting period. Data are obtained on demographic characteristics of patients, expected source(s) of payment, patients' complaints, diagnoses, diagnostic/screening services, procedures, medication therapy, disposition, types of providers seen, causes of injury, and certain characteristics of the facility, such as geographic region and metropolitan status. The population studied was those 18 to 80 years old presenting to the emergency department with a STEMI. The dependent variable was receipt of heparin the emergency department. The covariates or independent variables were: geographic locale (rural/non-rural), patient sex, race/ethnicity (Caucasian/non-Caucasian),

patient residence (nursing home, homeless, private residence, other), provider type (physician, nurse practitioner, physician assistant), and health insurance status (insured/noninsured). Statistical Package for Social Scientists (SPSS, IBM, Chicago, version 24.0) was used to conduct the analyses. The Institutional Review Board (IRB) at the researchers' institution does not require human subject's oversight for the analysis of de-identified data.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-045

Poster Title: Alcohol and illegal drug use in US high school aged youth: Impact on safety, violence-related behaviors and suicide ideation

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Additional Author (s):
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Purpose: The United States (US) Healthy People 2020 objectives call for the reduction of alcohol consumption, illegal drug use and improvements in mental health. Substance abuse is well-established as a major cause of long-term morbidity and mortality, but its impact on concerns of safety and violence in high school youth is less clear. Suicide, often linked to drug abuse, is the second leading cause of death among youths aged 10-24. The purpose of this study was to determine if alcohol and illegal drug use in US high school aged youth were associated with safety, physical violence, and suicide ideation.

Methods: 2013 Youth Risk Behavior Survey (YRBS) data was analyzed for this research study. YRBS is a national school-based survey conducted by the Centers for Disease Control and Prevention (CDC) and state, territorial, and tribal governments. YRBS is designed to collect data on a wide range of health-risk behaviors that contribute to the leading causes of death, disability and social problems among representative samples of high school students across the US. The 2013 YRBS data were used for this study because they were the most recently available data. Bivariate and multivariate analyses was performed on the data. There were three dependent variables for this study: suicide ideation, violence and safety. Violence and safety were computed variables. The independent variables were: alcohol use, substances abuse (cocaine, ecstasy, hallucinogens, heroin, glue/inhalants, synthetic marijuana, methamphetamines, steroids and prescription drugs without a prescription), age (14-18 years), sex, grade (9th-12th grade, ungraded or other grade), race/ethnicity (Hispanic, African American, Caucasian, or Other). The three dependent variables were used to test three logistic

regression models examining their association with the independent variables. Statistical Package for Social Scientists (SPSS, IBM, Chicago, version 24.0) was used to conduct the analyses. For all analyses alpha was set at less than or equal to 0.05. The Institutional Review Board (IRB) at the researchers' institution does not require human subject's oversight for the analysis of de-identified data.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-046

Poster Title: Incidence of dermatologic side effects in patients using epidermal growth factor receptor (EGFR) inhibitors at a large urban safety net hospital

Primary Author: Aimee Cooke, Hennepin County Medical Center, MN; **Email:** aimee.cooke@hcmed.org

Additional Author (s):
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Purpose: To determine the time to and rate of cutaneous reactions in oncology patients using epidermal growth factor receptor (EGFR) inhibitors. Secondary measures to include dose reductions, therapy discontinuation, and an evaluation of treatment for cutaneous reactions.

Methods: This a retrospective chart review of oncology patients seen in the Hennepin County Medical Center outpatient Cancer Clinic on EGFR inhibitors. These patients will be stratified into three groups for cutaneous reaction presentation: early presenters (less than two weeks into therapy), late presenters (between 2 and four weeks into therapy) and delayed presenters (greater than 4 weeks into therapy). Patients will be evaluated based off of their severity of reaction and placed into four groups as seen in the categorization of the Multinational Association of Supportive Care in Center (MASCC) guidelines (grade one through four). The following data will be collected: patient age, gender, ethnicity, smoking history, days on EGFR inhibitor, cancer diagnosis, complete chemotherapy regimen, reported adverse reactions, and time to incidence. Providers' notes will be reviewed to determine the severity of reaction, duration of reaction, and the treatment regimen for the cutaneous reaction (antibiotics, topical creams), including any dose reduction in the EGFR inhibitor or medication discontinuation. Treatment given for cutaneous reactions will be compared to the MASC guidelines to compare both time to treatment and the appropriateness of the treatment given. This study has been submitted to the Minneapolis Medical Research Foundation Institutional Review Board for approval.

Results: In progress.

Conclusion: In progress.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-047

Poster Title: Evaluating the incidence of leukopenia and neutropenia in renal transplant patients after replacement of cyclosporine with tacrolimus in immunosuppression protocol

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Purpose: Medications used in solid organ transplant may cause bone marrow suppression which often leads to dose reductions of immunosuppression or antiinfective prophylaxis, potentially predisposing kidney transplant recipients (KTRs) to rejection or infection. Evidence demonstrating prolonged graft survival and decreased rejection with tacrolimus over cyclosporine prompted a shift in the transplant immunosuppression protocol at a large safety net hospital. The risk of bone marrow suppression with tacrolimus versus cyclosporine in combination with guideline-recommended immunosuppression is unclear. This study will compare incidences of leukopenia and neutropenia in KTRs treated according to the retired cyclosporine-based protocol versus the tacrolimus-based protocol.

Methods: This study is pending Institutional Review Board approval. A retrospective review of two groups of adult KTRs - one cohort treated according to the previous cyclosporine-based immunosuppression protocol and one cohort treated according to the current tacrolimus-based protocol - will be conducted to compare rates of incident leukopenia (white blood cells less than 4000 cells per microliter) and neutropenia (neutrophils less than 1500 cells per microliter) within the first 12 months post-transplant. White blood cell and neutrophil counts will be collected at time of transplant, then according to the post-transplant follow-up timeline: two weeks, four weeks, three months, six months, nine months, and one year post-transplant. Additional data to be collected includes: comorbidities, serum creatinine, induction and maintenance immunosuppression, drug monitoring levels, donor and recipient viral status, transplant rejection incidence, and rate of infection. Compensatory dose reductions or

filgrastim administrations will be recorded for each leukopenic and neutropenic event. Reviewers will evaluate provider notes to determine temporal associations of medication changes, rejection episodes, or infections with leukopenia or neutropenia.

Results: N/A, in-progress

Conclusion: N/A, in-progress

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-048

Poster Title: Evaluation of asthma medications for a large urban, safety net health-system formulary

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Purpose: The healthcare system's mission is to ensure access to healthcare for patients regardless of their socioeconomic status. Patients without commercial insurance or who do not qualify for state insurance plans are eligible for the Hennepin County Discount plan, a program designed to reduce healthcare costs and cost to the patient, including medications. The Hennepin County Discount plan is in the early stages of formulary development based on cost and effectiveness of medications. The objective of this study is to evaluate the cost and effectiveness of asthma medications to identify those most appropriate for formulary inclusion at this 340B health system.

Methods: This project has been submitted to the Institutional Review Board. Patients who are currently enrolled in the Hennepin County Discount plan and have a prescription for a long-acting beta agonist and/or active corticosteroid inhaler will be included in the study. Electronic health records will be reviewed for each patient to evaluate efficacy of asthma medications. Efficacy will be determined by number of emergency department visits related to asthma within the past year, asthma control test scores, asthma medication refill history, and number of prednisone courses for asthma exacerbations within the past year. The cost of the asthma medications will be determined by reviewing drug prices available through the hospital's supplier. After the data has been collected, asthma experts will be consulted to review data and offer their clinical perspective based on expertise and literature.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 8-049

Poster Title: Mapping morphine equivalence (ME) to the national drug specific terminology, RxNorm for enhanced opioid monitoring

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Purpose: The Comprehensive Addiction and Recovery Act calls for the development of methods to monitor opioids due to an increase in related addiction and fatalities. Differences in potency make it difficult to monitor patients on more than one opioid concurrently. Using morphine equivalents (ME) could standardize monitoring of these patients. However, there are a lack of techniques to incorporate this information into large datasets. This study mapped ME to the national drug specific terminology, RxNorm. A dataset of outpatient opioid prescriptions from orthopedic surgery visits was tested to demonstrate the validity of using RxNorm to incorporate ME into monitoring projects.

Methods: A dataset of outpatient opioid prescriptions containing drug name, quantity dispensed, frequency, and dose was queried for 7290 orthopedic surgery visits from 05/01/2015 to 05/31/2016 across 12 Minnesota hospitals via an enterprise data warehouse. The drug name for each prescription was sent to RxNorm's RESTFUL RX API using the jsonlite package in R statistical software. Analysis of the approximate match values and common term types (TTY) for the top four RxNorm concept unique identifiers (RXCUI) returned for each drug name was performed. This allowed us to establish rules for string manipulation and supplementation of required information from the dataset. The Centers for Disease Control and Prevention (CDC) opioid conversion factors were then mapped to the identified RXCUIs based on ingredient and route. The dataset of outpatient opioid prescriptions was queried through RxNorm and ME were calculated for each prescription. Validation of ME was performed on 100 randomly selected prescriptions from the dataset and compared against manual ME calculations. This study was reviewed by Allina Health's institutional review board.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-050

Poster Title: Designing a heparin dosing protocol in ventricular assist device patients

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Purpose: Since their development in the early 1990's, ventricular assist devices (VADs) have fast become a standard practice for use in patients who require hemodynamic support for conditions such as end-stage heart failure or cardiogenic shock. Due to an increased risk of thrombosis during the time a patient has a VAD implanted, the manufacturer recommends systemic anticoagulation with heparin. However, there are currently no standard dosing protocols or policies to follow when determining anticoagulation for VAD patients which can make managing anticoagulation difficult. This study will help guide pharmacists in determining appropriate anticoagulation for patients with VADs.

Methods: The study will be submitted to the Allina Health Institutional Review Board for review. The electronic medical record system will be used to identify patients at Mercy Hospital that have had a VAD implanted between January 2013 and August 2016. Patient charts will be reviewed for heparin doses, aPTT levels, evidence of adverse events (e.g. bleeding), and evidence of thromboses during their hospital stay. Recent literature evaluating anticoagulation in patients with a VAD will be reviewed to determine optimal heparin dosing. Our internal practices will be compared to the literature to characterize opportunities for improvement and guide future heparin dosing in patients with ventricular assist devices.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-051

Poster Title: Ketamine use in a community hospital: Dosage and safety evaluation

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Purpose: Ketamine is an FDA approved anesthetic agent and is classified as a high-risk medication by the Institute for Safe Medication Practices (ISMP). Ketamine is also used off-label for indications including analgesia (acute/chronic pain), procedural sedation/analgesia, and depression. A lack of optimal dosing guidelines for off-label indications, in addition to potential safety concerns, may lead to underutilization and/or sub-therapeutic dosing. The objective of this study is to evaluate current prescribing patterns of ketamine, as well as to evaluate patient safety outcomes, at a community hospital. This study will help guide ketamine dosing, administration, and monitoring for physicians, nurses, and pharmacists.

Methods: The study will be submitted to the Institutional Review Board for review. The electronic medical record system will be used to identify patients on two campuses of a community hospital who received intravenous or intramuscular ketamine during their admission from August 1, 2015 to July 31, 2016. Patient charts will then be reviewed, and the following data will be collected: ketamine dosage, route of administration, dosing frequency, indication for use, patient care area, premedication use, concomitant pain medication use, pain scores, and patient age. Safety outcomes will be assessed by reviewing patient charts for vital signs (blood pressure, heart rate, respiratory rate, oxygen saturation) prior to administration, 30 minutes after administration, and 4 hours after administration. Patient charts will also be reviewed for mention of significant psychotomimetic effects (hallucinations, bad dreams), sedation/RASS scores, and any other notable tolerability issues. This data will be analyzed and compared with current literature.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-052

Poster Title: Empiric antibiotic therapy selection in penicillin-allergic patients presenting with sepsis: a quality improvement needs assessment

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Purpose: Penicillin is one of the most commonly reported medication allergies, but only a small percentage of patients will truly develop a life-threatening hypersensitivity reaction. A noted penicillin allergy results in limited treatment options and increases the utilization of broad-spectrum antibiotics such as carbapenems. Overuse of such agents is concerning due to growing rates of bacterial resistance and the associated higher rates of mortality. The aim of this project is to assess the appropriateness of antibiotic selection based on allergy documentation, identify areas for improvement, and examine opportunities available to further promote antimicrobial stewardship.

Methods: Park Nicollet Methodist Hospital, part of Health Partners, is a 426-bed community hospital located in Saint Louis Park, Minnesota. A retrospective chart review will be performed using Methodist Hospital's electronic medical record. Patients will be identified for potential inclusion if admitted to the hospital between March 1st, 2016 and August 31st, 2016 with a diagnosis of sepsis using the 10th revision of International Classification of Diseases (ICD-10) codes. Search codes will include sepsis (A41.50, A41.59, A41.9, R65.20) and bacteremia (R78.81, R78.89). Patients will be included if they are 18 years or older, have a documented penicillin allergy, and were prescribed meropenem or ceftazidime. Patients will be excluded if they did not provide consent for use of medical records for research projects, are pregnant, or were admitted to the intensive care unit. The following information will be gathered: gender, age, diagnosis, days of therapy, reported penicillin reaction or intolerance, date of noted penicillin allergy, history of prior beta-lactam use, indications for use, emergency department admission, primary service/medical unit (i.e., clinical team caring for the patient), additional/changes in antibiotics given after antibiotic therapy was initiated, culture results and sensitivities.

Appropriateness of antibiotic selection will be based on the documented allergic reaction, severity of hypersensitivity, and prior history of antibiotic use. This needs assessment evaluation is pending approval from Health Partners Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 8-053

Poster Title: Development and feasibility of a pharmacist-hospitalist collaboration to improve medication utilization at a community hospital: a medication safety improvement pilot.

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Purpose: The purpose of this quality improvement project is to develop, pilot and evaluate a pharmacist-hospitalist collaboration intended to improve safe medication utilization at a community hospital. The hospitalist department has advocated for additional pharmacist support, however, the responsibilities and feasibility of this role have not been established. This project will define the scope and focus of a pharmacist-hospitalist collaboration resulting in standardized work approved by both pharmacy and hospitalist department leaders. The resulting role will be piloted for feasibility and efficacy.

Methods: The methods for this project will follow the 'Plan-Do-Study-Act' model for quality improvement. In the initial 'Plan' phase, both pharmacists and hospitalists will be asked to voluntarily complete needs-assessment surveys regarding desired clinical interventions. The 'Do' phase will consist of drafting standard work that defines the scope and focus of a pharmacist-hospitalist collaboration based on compiled survey results data. The drafted standard work will be revised and approved by both pharmacy and hospitalist department leadership. During the 'Study' phase, the finalized standard work will be trialed by a pharmacist in a 4-week feasibility pilot. The feasibility pilot will include: implementing processes, documenting clinical interventions, and tracking allocation of time. Documentation of pharmacist time and clinical interventions will be done through iVent messages in the hospital's electronic medical record. Clinical interventions will include the following standard of care practices: medication reconciliations, corrections to prior to admission medication lists, patient education, referrals to medication therapy management services, recommendations for medication therapy optimization, corrections to patients' discharge after visit summary, and additional needs identified from the survey results data. The project will conclude with the 'Act'

phase, during which feasibility pilot data will be assessed and opportunities for process improvement will be identified. The project will result in revised standard work for a pharmacist-hospitalist collaboration intended to improve safe medication utilization at a community hospital.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 8-054

Poster Title: Utilizing rapid pathogen identification technology and a standardized clinical decision algorithm for antimicrobial stewardship decisions in patients with bacteremia

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Purpose: The FDA approved the multiplex, automated, molecular diagnostic test Verigene, which identifies twelve Gram-positive (GP) organisms, eight Gram-negative (GN) organisms, and nine associated resistance markers from positive blood cultures, with a turnaround time of approximately three hours. The utility and cost-effectiveness of such testing depends on time to physician action on reported results. The objective of this study was to evaluate the combined impact of rapid diagnostic testing and real-time antimicrobial stewardship interventions guided by a clinical decision algorithm outlining the most appropriate treatment choices for isolated pathogens in the management of patients with bacteremia.

Methods: The study was prospectively conducted between February 1, 2016, and March 31, 2016. All patients ages 18 and older who had positive blood cultures with GP or GN microorganisms identified by Verigene were included in the intervention group. Per study protocol, all positive Verigene results were phoned in to pharmacists, who then notified physicians of the blood culture results and provided antibiotic recommendations based on the clinical decision algorithm approved by the hospital's antimicrobial stewardship team. The primary outcome was the average time to targeted antimicrobial therapy. Secondary outcomes were lengths of hospital and intensive care unit (ICU) stays. Outcome results were compared to a historical control group of patients hospitalized at our facility between February 1, 2014, and March 31, 2014, with GP and GN positive blood culture isolates identified by conventional methods. It was determined that a sample size of 70 patients (35 patients in each group) would allow to detect an average 12-hour reduction to targeted antibiotic therapy with a power of 80 percent and an alpha value of 0.05, utilizing a two-sample t-test. The study protocol was granted exempt status by the institutional review board.

Results: The control group and intervention group consisted of 70 and 81 patients, respectively. Forty four patients (62.9 percent) in the control group and 50 patients (61.7 percent) in the intervention group had their antimicrobial therapy adjusted based on the blood culture results and continued on targeted therapy. These patients were included in the primary and secondary outcome analysis. Patients who continued on the same antimicrobial therapy (21.8 percent in control group and 22.9 percent in intervention group) or required broadened coverage after initial de-escalation (7.1 percent in control group and 9.9 percent in intervention group) were included in the ICU length and hospital length of stay analysis, but not in the primary outcome. Average time to targeted antimicrobial therapy was significantly reduced in the intervention group (45.67 vs. 20.8 hrs; p less than 0.001). There was not a statistically significant difference between the control and the intervention group in length of stay in the ICU or hospital. Mortality was similar between groups (7.1 percent vs 8.6 percent, p equals 0.916).

Conclusion: Our study demonstrated that rapid pathogen identification and real-time pharmacist intervention guided by the clinical decision algorithm can significantly reduce time to targeted therapy in the majority of patients without negatively affecting clinical outcomes.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-055

Poster Title: Delirium in the Intensive Care Unit (ICU): A Healthcare Team Collaboration for Prevention and Management

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Purpose: Medications known to cause delirium or that are associated with delirium development will be identified and tracked to determine opportunities to improve patient care in the ICU. The objective of this study, in collaboration with an interdisciplinary team, is to develop a proactive, pharmacy-driven approach to prevent and manage delirium in the ICU.

Methods: This is a single-center pilot project looking at patients in the cardiovascular and medical intensive care units. This project will consist of three phases: pre-consult, pharmacy delirium consult, post-consult. The primary efficacy outcome will be delirium free days, defined as the number of days in hospital without a CAM-ICU positive score. The secondary outcomes will include ICU length of stay, hospital length of stay, duration of mechanical ventilation, and falls. The data from the pre-consult and post-consult phase will be compared and analyzed.
Pre-consult: ICU patients eligible for inclusion in the study would have a retrospective chart review done to gather data for analysis.
Pharmacy delirium consult: ICU patients eligible for inclusion in the study will have a medication history review of both inpatient and pre-hospital medications, as well as compliance assessment. A progress note will be completed with any discrepancies and medication changes will be recommended that may decrease the incidence of delirium or shorten the duration if delirium has already occurred.
Post-consult: The post-consult phase would include a retrospective chart review on the patients that received the delirium consult, once discharged.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-056

Poster Title: Review of treatment selection and duration of therapy for Clostridium difficile at a community level one trauma center

Primary Author: Nicole Buuck, North Memorial Medical Center, MN; **Email:** nicole.buuck@northmemorial.com

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Purpose: In 2011, Clostridium difficile infection (CDI) was estimated to cause at least half a million infections in the United States. Of those that develop CDI, there were 83,000 patients that experience at least one recurrence. The Infectious Disease Society of America (IDSA) guidelines for CDI provide treatment recommendations based on severity of disease, initial occurrence and recurrence of infection. The purpose of this review of treatment selection and duration of therapy for patients with CDI is to assess the adherence to the IDSA guidelines.

Methods: A literature review and medication use evaluation will be used to assess the treatment selection and duration of therapy for patients with CDI in accordance with the IDSA guidelines. A sampling of data will be reviewed from a medication use evaluation from April 1st, 2016 through June 30th, 2016. Patients > 18 years of age, admitted to the hospital and diagnosed with CDI will be included in this review. A diagnosis of CDI will be tied to ICD-10 code of A04.7. Patients will be excluded if they have an allergy or other contraindication(s) to the recommended treatment per the IDSA guidelines. Parameters for adherence assessment will include white blood cell count (wbc), serum creatinine (SCr), timing of symptom onset, initial episode versus recurrent episode of CDI, severity of disease defined by leukocytosis with a wbc ≥ 15,000 cells/mL or SCr level ≥1.5 times the premorbid level, Clostridium difficile toxin polymerase chain reaction (PCR) result, treatment selection, duration of therapy, and prior antibiotic use within 28 days. Additionally, a CDI order-set will be developed and implemented for these patients, which will include pharmacist-led education to provider groups on current IDSA guidelines and order-set utilization. An evaluation will be conducted after implementation of the CDI order-set and education to providers to assess for changes in adherence to the IDSA guidelines in order to optimize CDI treatment.

Results: In progress

Conclusion: In progress

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-057

Poster Title: Tranexamic Acid Protocol Completion Rates of Trauma Patients Presenting by Emergency Medical Services to a Community Level-One Trauma Center

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Purpose: Current evidence suggests that tranexamic acid (TXA) confers a mortality benefit in adult patients with acute trauma and significant hemorrhage if given within three hours of injury. Studied dosing protocols include two-part dosing algorithm. This study is intended to determine the rate of protocol completion for patients in whom a TXA protocol is initiated by Emergency Medical Services and continued following arrival at a Level I Trauma Center.

Methods: This is a retrospective review of all patients transported by a single ambulance service to a single Level I Trauma center and who received tranexamic acid in the EMS and hospital settings. The following data points were abstracted from EMS and hospital charts: patient demographics, mechanism of injury, vital signs, time of injury, and timing of TXA dosing. The primary endpoint was completion of the entire TXA protocol. Secondary endpoints included occurrence of vascular occlusive events and. The study period spanned from December 2014 to September 2016. This was IRB-approved.

Results: NA

Conclusion: NA

Submission Category: Critical Care

Submission Type: Case Report

Session-Board Number: 8-058

Poster Title: A Case Series of Ketamine as an Analgesia Adjuvant in Trauma ICU Patients

Primary Author: Mary Walters, North Memorial Medical Center, MN; **Email:** walte305@umn.edu

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Purpose: Ketamine, an N-methyl-D aspartate (NMDA) receptor antagonist, has been explored by the North Memorial Trauma Service as an analgesic adjuvant at low "sub-anesthetic" doses (0.1 mg/kg/hr continuous IV infusion) in pain management of Trauma ICU patients. Based on limited data, ketamine is thought to have opioid-sparing and favorable hemodynamic properties compared to some traditional pain management modalities and represents a promising therapy in this patient population. This case series highlights our experience with ketamine thus far.

Patient 1 was a victim of a motor vehicle crash with closed fractures of the sternum, transverse lumbar vertebrae 2 and 3, and bilateral ribs 3-5. His pain management consisted of acetaminophen, oxycodone, and hydromorphone PCA. Despite these interventions, the patient's pain was uncontrolled with a mean 24-hour Numeric Pain Scale (NRS) Score of 6.5 and worst reported pain of 8. Ketamine continuous infusion at sub-anesthetic doses listed earlier was initiated, and the patient's mean reported NRS decreased to 4.33 with a worst reported pain of 6. Total 24-hour opioid consumption also decreased from 230 mg to 160 mg morphine equivalents. Richmond Agitation-Sedation Scale (RASS) scores, heart rate, respiratory rate, and blood pressure were unchanged after initiation of ketamine. The patient's supplemental oxygen requirement, however, decreased from 10 L/hr via an oxymizer to 4L/hr via nasal cannula.

Another victim of a motor vehicle accident, Patient 2 had multiple fractures of the ribs, thoracic and lumbar spine, and facial bones and a subdural hematoma. Ketamine continuous infusion was started shortly after patient had been extubated to manage rib pain with a mean NRS of 4. Pain management prior to ketamine included: acetaminophen, hydromorphone, and a lidocaine patch. Mean NRS remained unchanged, but 24 hour opioid utilization decreased from 15 mg to 4 mg morphine equivalents. Blood pressure, RASS score, and heart rate, similarly,

remained unchanged after the initiation of the NMDA antagonist. Oxygen demands, however, increased due to the development of tension pneumothorax secondary to the patient's trauma. Ketamine was discontinued in pursuit of comfort care. Even though intracranial pressures (ICP) were not measured while on ketamine, the patient exhibited no signs or symptoms elevated ICP (i.e. headache, nausea, vomiting, altered mental status, vision changes, etc.) while on or shortly after therapy.

Patient 3 suffered a traumatic brain injury, open nasal bone and vertebral fractures after an unhelmeted motorcycle crash. He was intubated and sedated on a midazolam drip due to aspiration, respiratory failure, and agitation. While weaning off the benzodiazepine, the patient remained distressed, and thus ketamine continuous infusion was started to aid in pain management and reduce agitation. Again, vitals remained stable and unchanged after the intervention, but the patient became even more agitated with average RASS scores increasing from +1 to +3. Ketamine was subsequently discontinued along with midazolam and the patient was switched to propofol. Mean 24-hr Behavioral Pain Scores (BPS) were similar before and during the ketamine infusion, but 24-hour morphine equivalent utilization decreased from 22 mg to 9 mg. Again, ICP was not measured, but the patient exhibited no concerning symptoms of this potential risk with ketamine use in head trauma patients.

Although further study is required to elucidate the utility of ketamine as an analgesic, these cases demonstrate promise for the NMDA antagonist as an adjuvant in pain management in Trauma ICU patients to reduce opioid utilization without altering cardiopulmonary function.

Methods:

Results:

Conclusion:

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-059

Poster Title: Establishing a creatinine clearance cutoff guideline for sucrose-containing intravenous immune globulin through medication use evaluation and retrospective chart review

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Purpose: Intravenous immune globulin (IVIG) products are manufactured with varying sources of sugar stabilizers. Those manufactured with sucrose have been shown to contribute to acute renal failure, renal dysfunction, and osmotic nephrosis in patients susceptible to these adverse effects. Products produced without sucrose are available, but at an increased cost. In a time of exponential drug-expenditure growth, treatment costs must be minimized while maintaining patient safety. This study will determine the impact of sucrose-containing IVIG on patients developing acute kidney injury (AKI). This data will be used to create creatinine clearance (CrCl) cutoff guidelines for sucrose-containing IVIG.

Methods: The study will be submitted to the Institutional Review Board for review. The electronic medical record system will be used to identify patients in four metro hospitals of one health-system who received sucrose-containing IVIG as inpatients between August 1, 2015 and July 31, 2016. Patients with a baseline serum creatinine (sCr) level obtained within 30 days prior to and within 72 hours after IVIG administration will be included in this retrospective study. Acute kidney injury will be defined as a sCr increase of 0.3 mg/dL or greater within 48 hours, or an increase in sCr of at least 1.5 times baseline within a seven day period. Baseline CrCl will be calculated for all subjects using the Cockcroft-Gault equation. Subjects will be divided into two categories: those who developed AKI while on IVIG, and those who did not. Baseline CrCl of these two groups will be compared to identify if there is a correlation between baseline CrCl and AKI development. In addition, chart review will be performed for subjects in the AKI group to identify possible risk factors that may have contributed to AKI development.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-060

Poster Title: Are there population related disparities in patients who have attended outpatient rehabilitation after a heart attack or stroke?

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Purpose: An estimated 935,000 US adults experience a cardiovascular event annually, and approximately 30 percent will experience a second one. Cardiac rehabilitation programs can reduce mortality, improve functional capacity, improve quality of life, and decrease the incidence of re-hospitalization for cardiac complications and overall medical costs. Despite the known benefits of cardiac rehabilitation, less than 30 percent of eligible patients participate in a cardiac rehabilitation program after a cardiovascular event. This research sought to answer the question: Are there population-related disparities in patients who have attended outpatient rehabilitation after a heart attack or stroke?

Methods: Using bivariate and multivariate techniques, a cross-sectional analysis of the 2013 Behavioral Risk Factor Surveillance Survey (BRFSS) data was performed. BRFSS data are collected using a random-digit dial telephone survey targeting adults 18-97 years of age. All BRFSS data are self-reported responses to mostly forced-choice questions. All analyses conducted for this study using BRFSS data were performed on weighted data. The weighting provides a stratified representation of the US adult non-institutionalized population and conforms to census data patterns. BRFSS includes both core modules and optional modules in the survey. In 2013, 17 states chose to collect data using the optional Cardiovascular Disease (CVD) prevention module. From the CVD prevention module, we were interested in data generated by questions regarding participation in cardiac rehabilitation. Inclusion criteria for the population examined were: male and female adults 18 years of age and older who had experienced either a heart attack or stroke. The dependent variable for this study was

participation in a cardiac rehabilitation program. The study covariates were: sex, age range, race/ethnicity, annual household income, education attained, health insurance status, and geographic location (rural/non-rural). Statistical Package for Social Scientists (SPSS, IBM, Chicago, version 24.0) was used to conduct analyses. The Institutional Review Board (IRB) at the researchers' institution does not require human subject's oversight for analysis of de-identified data.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-061

Poster Title: Population level factors impacting appropriate monitoring of fasting plasma glucose in patients receiving second-generation antipsychotic medications

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Purpose: Second-generation antipsychotics have been linked to metabolic syndrome or an increased risk of heart disease and diabetes mediated via risk factors including elevated blood sugar. The American Diabetes Association and American Psychiatric Association made specific monitoring recommendations with the use of second-generation antipsychotics, including a recommendation to annually monitor fasting plasma glucose in these patients. Research has shown limited application of this recommendation in practice, and to our knowledge, population factors impacting this choice have not been examined. We sought to discern what population-related factors played a role in the patient receiving the recommended annual fasting plasma glucose screening.

Methods: To answer the research question, 2012 National Ambulatory Medical Care Survey (NAMCS) data were analyzed. NAMCS collects data on the utilization and provision of ambulatory care services nationwide. These data are collected from a national sample of ambulatory care visits in primary care offices. The 2012 NAMCS data were used for this study because they were the most recently available data. These data were weighted to be nationally representative of patient health records. Bivariate and multivariate analyses were performed on the data. The study population was male and female adults 18 years of age and older who had been prescribed a second-generation antipsychotic medication (clozapine, olanzapine, risperidone, quetiapine, aripiprazole, ziprasidone). A multivariate logistic regression model was tested using had fasting plasma glucose screening in the past twelve months as the dependent

variable. The independent variables included in the model were: sex, race/ethnicity, payer source, provider type, and geographic locale (rural/urban) of the provider.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-062

Poster Title: Identification of Naloxone Candidates through Concurrent Opioid and Benzodiazepine Use

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Jessica Lind

Purpose: On March 18, 2016, the Centers for Disease Control (CDC) recommended clinicians consider offering naloxone when factors that increase risk for opioid overdose, such as history of overdose, history of substance abuse, disorder, higher opioid dosages, or concurrent benzodiazepine use, are present. Furthermore, the CDC recommended clinicians avoid prescribing opioids and benzodiazepines together whenever possible. The aim of this medication use evaluation is to determine the number of patients with an indication for naloxone based on concurrent opioid and benzodiazepine use at a family medicine clinic.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients to be included will meet the following criteria: (1) receive primary care at the family medicine clinic between September 1, 2015 and August 31, 2016 and (2) have active prescriptions for both an opioid analgesic and a benzodiazepine. Electronic medical records will be analyzed to determine the number of patients with an indication for a naloxone prescription based upon their concurrent opioid and benzodiazepine use.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 8-063

Poster Title: Improving transitions of care management (TCM) in a family medicine residency teaching clinic

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Purpose: Medication management is a key driver to prevent hospital readmissions. As medication experts of the healthcare team, pharmacists position themselves to identify, resolve, and prevent drug-therapy problems (DTPs) leading to hospital readmissions. However, there are many more drivers to TCM, including inpatient and patient-specific drivers. The Institute for Healthcare Improvement (IHI) Model for Improvement is a framework to identify and study these drivers. This project aimed to test how pharmacists apply this model and collaborate with other members of the TCM team to reduce 30-day hospital readmissions and reduce drug-therapy problems (DTPs) related for the reason to readmission over time.

Methods: Over a nine-month span of time, the aim of this continuous quality improvement initiative was to:
1) reduce 30-day hospital readmissions by 25%, and
2) reduce number of DTPs (per month) related to admission from baseline (since February 2016) by 75%.
The project took place in an urban family medicine residency-teaching clinic located in south Minneapolis, Minnesota. Patients included in the project were any patient discharged from any hospital and referred to clinic for a TCM visit from August 1, 2015 to April 30, 2016. A TCM visit consisted of a 20-minute medication therapy management (MTM) visit with a pharmacist and a 20-minute visit with a provider. MTM pharmacists (2) documented each patient encounter in RedCapTM, which detailed the number and severity of drug-therapy problems assessed and the interventions recommended or made during the MTM visit.
The IHI Model for Improvement served as the framework for which the project was organized. With stakeholders identified, a driver diagram was created to map the clinic's existing TCM process. Subsequently, small tests of change on various drivers of TCM were initiated,

performed, and evaluated using “Plan-Do-Study-Act" (PDSA) cycles. The three main drivers tested were those of 1) MTM pharmacist availability, 2) patient understanding of care primary care plan, and 3) medication management prior to discharge.

Results: Over the nine-month study, MTM clinic pharmacists saw 143 patients for TCM visits. An average of two DTPs was found per visit with 295 DTPs found in total. Sixty-two percent (n= 183) of all DTPs found required a healthcare professional intervention to resolve. Of patients scheduled for a TCM visit when an MTM pharmacist was not available, telephone contact with a pharmacist identified an average of 2.25 DTPs per patient. When a pharmacist called and spoke to patients (n=21) two weeks after the clinic TCM visit, an average of 1.71 DTPs remained; 58.3% of the DTPs found during these phone calls related to re-admission. Lastly, inpatient pharmacy teams were reluctant to begin TCM quality improvement initiatives due to staffing and budgetary constraints.
When compared to readmission data from the year prior to the study period, there was a 48.1% reduction in 30-day readmissions; this was found to be statistically significant ($p < 0.0045$). Forty-four percent of the total DTPs found were related to the reason for admission, with chronic conditions of asthma (6%), heart failure (5%), diabetes (5%), and COPD/pneumonia (15%) among the conditions with most admission-related DTPs. Identification of DTPs related to readmission increased over the course of the study period.

Conclusion: While a statistically significant reduction in 30-day readmissions was found, a cause-and-effect association between this finding and pharmacist interventions in this study cannot be made conclusively. However, patients appeared to benefit from contact with a pharmacist. A positive trend in data suggests that phone calls by a pharmacist placed two weeks after the clinic TCM visit reduced hospital readmissions for those patients. The success of this initiative identifies a valuable role that pharmacists can play in TCM processes to improve patient outcomes.

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 8-064

Poster Title: Evaluation of appropriateness and financial impact of administering restricted outpatient medications in inpatient settings

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Purpose: Medications are often restricted to outpatient use when indicated for chronically managed conditions. These medications are infrequently utilized in the acute setting, but, if inappropriately administered, can incur significant and unnecessary financial burden. Limiting prescriptive authority of such medications can decrease incidence of inappropriate administration as well as lower unnecessary inpatient expenses. The purpose of this study is to evaluate appropriateness and financial impact of administering restricted outpatient medications before and after the implementation of a novel order policy.

Methods: The institutional review board approved this retrospective chart review analysis of subjects who received restricted outpatient medications while being managed on inpatient units. Subjects were identified through electronic medical record reporting for patients hospitalized at Morristown Medical Center and Overlook Medical Center. Baseline patient-related data collected includes age, gender, patient care unit, and time of discharge. Baseline treatment-related data collected includes the name, dose, route, and frequency of the restricted medication, time of administration, indication for treatment, cost of treatment, and if initiation or continuation of therapy. The primary outcome measures are time from administration to discharge and cost of therapy.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-065

Poster Title: Evaluation of parenteral nutrition indications and adverse events in adult patients in two community teaching hospitals

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Purpose: Nutrition support in adults is a complex and crucial aspect of patient care. Current guidelines recommend specialized nutrition support with enteral (EN) or parenteral nutrition (PN) for patients with inadequate oral intake for seven to fourteen days. PN has traditionally been indicated if EN is not feasible or will not provide adequate nutrition within seven days following admission. Initiation of PN is an invasive, multifactorial decision requiring assessment of the potential benefit prior to initiation. The purpose of this study is to evaluate PN indications and to assess glycemic variability, central line days and incidence of bloodstream infections in adults.

Methods: A retrospective chart review identifying hospitalized patients from January 2016 to August 2016 will be conducted in patients greater than or equal to 18 years of age receiving PN. Patients will be identified via the internal PN system at Morristown Medical Center and Overlook Medical Center. Patients will be excluded if they did not receive the ordered PN. The primary outcome is the number of days of inappropriate PN as defined by registered dietician assessment or the ability to receive or meet caloric goals with EN. Secondary outcomes include nutritional risk screening (NRS) score, total days of PN therapy, central line days, insulin requirements, and bloodstream infections. Baseline demographics will be evaluated as well as history of gastrointestinal or pancreatic disease, albumin, prealbumin, admission to the intensive care unit (ICU), and cost. This retrospective chart review was approved by the institutional review board.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-066

Poster Title: Evaluating the appropriateness of tbo-filgrastim use in oncology patients in two community teaching hospitals: A retrospective review.

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Purpose: Febrile neutropenia, a dose limiting toxicity of chemotherapy is a major complication associated with myelosuppressive therapy. National Comprehensive Cancer Network (NCCN) and American Society of Clinical Oncology (ASCO) guidelines recommend the use of granulocyte- colony stimulating factors (G-CSFs) to reduce the risk, severity and duration of febrile neutropenia. Inappropriate or prolonged use of G-CSFs may result in increased cost and adverse events such as bone pain, musculoskeletal pain, and flulike symptoms. The objective of this study is to evaluate the appropriateness of tbo-filgrastim use for the treatment or prophylaxis of febrile neutropenia within two medical centers.

Methods: A retrospective chart review will be conducted on 100 randomly selected hospitalized patients, greater than or equal to 18 years of age, receiving tbo-filograstim from March to September 2016. Patients with an oncology related disease, receiving chemotherapy within 7 days, or with febrile neutropenia will be included. Patients receiving tbo-filgrastim for severe chronic neutropenia will be excluded. The primary endpoint is the percentage of patients receiving tbo-filagrastim for an appropriate indication. ASCO defines appropriate indications as prophylaxis of neutropenia in patients undergoing chemotherapy or treatment of febrile neutropenia defined as a neutrophil count less than 1,000 neutrophils/mcL with a temperature of greater than 38.3°C. The secondary endpoint is the percentage of patients in whom tbo-filgrastim therapy was appropriately discontinued. Additionally, the cost incurred from inappropriate therapy will be analyzed. All appropriate demographic data along with temperature, ANC, documented indication for use, type and date of chemotherapy, number of doses of tbo-filgrastim received, and strength of therapy will be collected. Descriptive statistics

will be used to summarize the results. This study has been approved by the institutional review board.

Results: N/a

Conclusion: N/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-067

Poster Title: Clinical evaluation of ceftazidime-avibactam use in a community teaching hospital

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Purpose: Ceftazidime-avibactam (CAZ-AVI) is approved for the treatment of complicated urinary tract infections (cUTI), including pyelonephritis, and when used in combination with metronidazole is also approved for the treatment of complicated intra-abdominal infections (cIAI). At Atlanticare Regional Medical Center (ARMC), CAZ-AVI use is restricted and requires an infectious disease (ID) consultation. The antibiotic is reserved for multidrug-resistant (MDR) infections, including carbapenem-resistant Enterobacteriaceae (CRE). The objective of this evaluation is to assess each case for appropriate antibiotic utilization, as well as clinical and microbiologic outcomes as a function of our antimicrobial stewardship program.

Methods: Institutional Review Board approval was obtained from ARMC prior to data collection. Patients were identified via a report from Discern Analytics in Cerner. All patients who received one or more doses of CAZ-AVI from July 2015 through June 2016 were included in this medication use evaluation. Nineteen patients were identified for evaluation. Each patient's electronic medical record will be reviewed and data will be collected including patient demographics, pertinent past medical history, immune status, source of infection, culture and susceptibilities, concurrent infections, level of care, and length of stay. Appropriateness of use will be evaluated by assessing CAZ-AVI dosing regimens, duration of therapy, and reassessment of dosing throughout treatment duration. Patient outcomes will be evaluated for clinical and microbiological cures. Clinical cure will be defined by a resolution or improvement of infection, based on clinical variables, determined by the investigator on a case by case basis. Microbiologic cure will be defined as subsequent negative cultures when available. Thirty day readmission rates will be reported, particularly evaluating source of infection and culture

results. The results of this study will be used to assess the appropriateness of CAZ-AVI prescribing and efficacy of treatment.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-068

Poster Title: Clinical and economic evaluation of intravenous ethacrynic acid utilization in a community teaching hospital

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Purpose: Patient allergies to sulfonamide antibiotics may lead to avoidance of non-antibiotic sulfonamides despite limited evidence for cross reactivity. Ethacrynic acid is a diuretic that does not contain the sulfonamide moiety, and is often used for patients with a sulfonamide allergy instead of loop diuretics, thiazides, or acetazolamide. The acquisition cost for intravenous (IV) ethacrynic acid increased, necessitating the need for stringent utilization. The objective of this study is to evaluate the use of IV ethacrynic acid in patients with documented sulfonamide allergies and the impact of pharmacy managed restrictions and education on ethacrynic acid at a community teaching hospital.

Methods: All admitted patients who received at least one dose of IV ethacrynic acid at our hospital from January 1, 2015 to August 31, 2016 were included in our evaluation. Patients were identified through a report generated from Discern Analytics in Cerner. Data collection included the nature of each patient's sulfonamide allergy and date of allergy documentation, the specific drug causing the allergic reaction, and reaction severity. Patients were considered to have a severe reaction if they had one or more of the following: respiratory depression, urticaria, anaphylactic shock, edema, laryngeal spasm, upper respiratory tract hypersensitivity reactions, and angioedema. The ethacrynic acid dose and duration was recorded, as well as indication. Ethacrynic acid was removed from our computerized physician order entry system, requiring the provider to contact pharmacy to order the drug. A clinical pharmacist would then evaluate the order and assess for appropriateness prior to dispensing the medication. Costs of therapy will be evaluated, specifically before and after hospital staff education and ordering

restrictions were implemented. The Institutional Review Board at Atlanticare Regional Medical Center granted approval for this project.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 8-069

Poster Title: Clinical and financial evaluation of a 750 mg ceiling-dose telavancin regimen in obese patients

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Purpose: Telavancin is a lipoglycopeptide antibiotic used for the treatment of gram-positive bacterial infections. Based on pharmacokinetic studies, obese patients achieve higher exposures of telavancin compared to non-obese patients, and target tissue drug levels exceed the minimum inhibitory concentration for gram-positive organisms several-fold throughout the dosing interval. Standard telavancin dosing is 10 mg per kg once daily. A maximum daily dose of 750 mg was employed at our community hospital to minimize toxicity without compromising the efficacy. The purpose of this study is to assess patient outcomes and financial impact of a maximum 750 mg telavancin dose in obese patients.

Methods: This retrospective evaluation included all patients with a body mass index (BMI) greater than or equal to 30 kg per meter squared, defined as obese, and a weight of 80 kg or greater, who had received at least one dose of intravenous telavancin 750 mg between June 2015 and July 2016. Patients were identified using a generated report from Cerner Discern Analytics. Medical records were reviewed for data including pertinent past medical history, indication for telavancin, level of acuity, length of stay (LOS), culture and susceptibilities, and concurrent infections. Previous antibiotic use, immune status, and adverse drug events were recorded. Both clinical and microbiologic outcomes were assessed. Clinical cure was defined as documented infection improvement based on clinical findings and investigator determination. Microbiologic cure was defined as subsequent negative cultures in evaluable patients. Cost savings were determined based on the cost difference between our capped 750 mg doses and a

10 mg per kg dose for each patient. The institutional review board at Atlanticare Regional Medical Center granted approval for this evaluation.

Results: Four patients with an average age of 57 years were evaluated. The average patient weight was 96 kg (range 81 to 116) and average BMI was 34 (range 30 to 41). All patients were treated on the general medical unit for indications including osteomyelitis, pneumonia, central line-associated bloodstream infection (CLABSI), and bacteremia. The average telavancin dose based on weight was 8 mg per kg (range 6.6 to 9.3). Patients remained on telavancin for an average duration of 8 inpatient days. One patient with methicillin-resistant Staphylococcus aureus (MRSA) osteomyelitis had a 74 day LOS until transferred to another hospital while on telavancin day 11, and subsequently lost to follow up. The average LOS for the 3 remaining patients was 17 days (range 9 to 28). Infections included methicillin-susceptible Staphylococcus aureus pneumonia, methicillin-resistant Staphylococcus epidermidis CLABSI, and MRSA bacteremia. No adverse effects were reported with telavancin administration. Clinical cure was achieved in all 3 evaluable patients. Microbiological cure was only evaluable in the CLABSI and bacteremia patients, with both having sterile blood cultures while receiving telavancin. The use of a 750 mg telavancin ceiling-dose resulted in a cost saving of 3,024 dollars for all 4 patients.

Conclusion: Utilizing a maximum daily 750 mg telavancin dose appears to be an effective and cost saving option in this retrospective evaluation of obese patients. Doses of telavancin lower than the standard dose of 10 mg per kg may be sufficient for some patients without compromising efficacy. Additional pharmacokinetic and clinical studies are warranted in obese patients weighing over 80 kg to further support the results of this small retrospective evaluation.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-070

Poster Title: Impact of pharmacogenetic testing on reducing trial-and-error prescribing in a psychiatric patient population

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Purpose: Pharmacogenetic testing examines inherited gene variations that dictate drug response and explores ways that these variations can be used to predict whether a patient will have a good, bad, or no response to a medication. It is estimated that genetic factors contribute to 20-40% of differences in drug metabolism and response between patients. The goals of pharmacogenetic testing are to identify these factors and develop optimized treatment strategies to improve efficacy, while reducing adverse reactions. The purpose of this study is to quantify the significance and reliability of pharmacogenetic testing in an outpatient psychiatric population.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients included in this study must be greater than 18 years of age and participate in outpatient psychiatric services provided through Barnabas Behavioral Health. Pharmacogenetic testing will be offered and administered based on prescriber recommendation. Samples obtained by the prescriber along with documentation of current medications will be sent by the pharmacy department to a third party laboratory for testing. Results will be available within two business days. Result reports will contain information regarding patient specific metabolism on current medications and multiple psychiatric medications. Medications will be categorized as low, moderate, or high genetic impact based on each patient's gene variations. Interpretation of the results will ultimately be left to the prescriber's clinical judgment. Outcomes that will be measured are frequency of medication changes, severity of side effects, and rate of readmission. Results of patients participating in pharmacogenetic testing will be compared to a control group of patients not participating with similar baseline characteristics. Chart reviews will be completed to obtain data to measure outcomes. Investigators will rate severity of side

effects using the Monitoring of Side Effects Scale (MOSES). The fisher exact test will be used for the statistical analysis of medications changes. The two-sample t-test will be used to assess the frequency and severity of side effects and rate of re-admission.

Results: N/A - Research In Progress

Conclusion: N/A - Research In Progress

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 8-071

Poster Title: Impact of a pharmacy monitoring service on glycemic control in patients with diabetes and mental health disorders

Primary Author: Stepan Uhlyar, Barnabas Health Behavioral Health Center, NJ; **Email:** uhlyar@nova.edu

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Purpose: Diabetes mellitus is the seventh leading cause of death in the United States and a major contributor of cardiovascular mortality. Diabetic patients with mental health disorders are at a higher risk for progressive complication due to the nature of their illness, poor adherence, metabolic effects of psychotropics, and barriers to healthcare. Medication optimization and control of glycated hemoglobin (HbA1C) have been shown to reduce microvascular complications of diabetes. The objective of this initiative was to assess the impact of pharmacy intervention on glycemic control in diabetic patients with comorbid mental health disorders in an acute psychiatric setting.

Methods: A pharmacy quality improvement initiative was approved by the institutional review board and implemented within an acute care inpatient psychiatric hospital. The pharmacy intervention consisted of the pharmacy resident or another clinical pharmacist providing daily patient monitoring and identifying optimization opportunities. Utilizing a real-time clinical surveillance program, 136 patients were identified and monitored between October 2015 and March 2016. The inclusion criteria consisted of patients aged 18 to 85 with at least one of the following: a diabetes diagnosis, concurrent anti-hyperglycemic medication or insulin, fasting blood glucose greater than 126 mg/dL, or HbA1C greater than 6.5 percent. During the statistical analysis, patients with less than 2 blood glucose readings were excluded. Current hospital practice served as the standard control for assessing the impact of the intervention. Primary outcome assessed glycemic control via the incidence of hyperglycemic events, defined as blood glucose readings greater than 200 mg/dL. Secondary outcome assessed the appropriateness of HbA1C monitoring and the incidence of hypoglycemia, defined as blood glucose readings less than 70 mg/dL. Chi square testing was utilized to assess the nominal data and unpaired 2-tailed student t-test was used for continuous data.

Results: A total of 137 patients were included in this analysis; control group (n equals 71) and pharmacy intervention group (n equals 66). Males consisted of 55 percent of the population, mean age was 60 years old, mean weight was 87 kg, 88 percent of the patients were diagnosed with type 2 diabetes, mean HbA1C was 7.8 mg/dL, and the most prevalent psychiatric comorbidities were schizophrenia, depression, and dementia. Twelve patients were excluded from statistical analysis due to a lack of more than one recorded blood glucose reading. In the primary outcome, the pharmacy intervention group had a statistically significantly reduction in the occurrence of hyperglycemic events versus control, 23.5 to 33.8 percent (p less than 0.005). Furthermore, the pharmacy intervention group demonstrated an absolute reduction in hyperglycemic events by 10.3 percent and a relative risk reduction of 31.1 percent. In the secondary outcome, HbA1C monitoring compliance had a statistically significant increase from 39.5 to 69.1 percent, (p less than 0.05) between the control and pharmacy intervention group, respectfully. There was no observed difference in the incidence of hypoglycemia between the two groups.

Conclusion: Implementation of a pharmacy intervention initiative reduced the number of hyperglycemic events and improved HbA1C monitoring compliance. The addition of a pharmacy-driven diabetes monitoring service may improve patient outcomes and bridge the gap between health disparities in patients with mental health disorders.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-072

Poster Title: Impact of implementing an antimicrobial stewardship program in a community hospital

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Purpose: The Joint Commission has mandated antimicrobial stewardship standards with a focus on streamlining therapy and reducing antimicrobial resistance. This is in an effort to reduce inappropriate antimicrobial prescribing and preserve the utility of our current antibiotics. The purpose of this study was to determine the impact of the addition of an antimicrobial stewardship pharmacist to a community hospital. The primary objectives of this study were to compare time to initiation of appropriate antibiotics and time to de-escalation of therapy. The secondary objectives were to compare length of stay, antimicrobial cost, and renal dosage adjustments.

Methods: This retrospective chart review, approved by the ethics committee, included inpatients admitted from July 1, 2015 to September 30, 2015 and July 1, 2016 to September 30, 2016 with a diagnosis of urinary tract infection or bacteremia who received concomitant antibiotics. Patients were excluded if they were less than 18 years of age, length of stay less than 48 hours, or pregnant. The following baseline demographic information will be collected: age, gender, height, weight, serum creatinine, and admission diagnosis. The following inpatient data will be collected: antibiotic dose and duration, time from diagnosis to appropriate antibiotic administration, renal dose adjustments, urine and blood cultures, temperature, white blood cell count, and length of stay. Descriptive statistics will be used to analyze demographic data. Student's t-test will be used to analyze total daily antibiotic cost, time from diagnosis to appropriate antibiotic therapy, time to appropriate de-escalation, and length of stay. Chi-square test will be used to analyze number of renal dosage adjustments.

Results: In progress

Conclusion: In progress

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 8-073

Poster Title: Evaluation of phenytoin and fosphenytoin loading dose appropriateness in a community teaching hospital

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Purpose: Phenytoin and fosphenytoin are hydantoin anticonvulsants used for partial and generalized tonic-clonic seizures. These antiepileptics present dosing challenges due to weight-based dosing, drug levels that are highly dependent on albumin, and Michaelis-Menten saturable kinetics. These complexities are often apparent in obese patients, who may receive loading doses of 1500 mg or greater, but the added effectiveness of doses over 1500 mg is questionable. Hypoalbuminemia can also present complicated dosing challenges. The objective of this study is to evaluate the appropriateness of phenytoin and fosphenytoin loading doses, with subgroup analyses focused on obese and hypoalbuminemic patients.

Methods: This retrospective, observational, single-center study has been submitted to the hospital institutional review board for exempt approval. Patients will be included in the study if they were (1) admitted as inpatient, (2) 18 years of age or older, (3) administered phenytoin or fosphenytoin loading doses between March 1, 2015 and February 29, 2016, and (4) had free phenytoin levels drawn, or total phenytoin levels with albumin levels drawn within 24 hours of the total phenytoin level. Total phenytoin levels will be adjusted based on the Sheiner-Tozer equation if free phenytoin levels are unavailable. De-identified data to be collected includes: demographic information, actual body weight, height, past medical history, concomitant medications, phenytoin and fosphenytoin doses and dosage forms, total and free phenytoin levels, albumin levels, and reports of seizure activity or adverse effects, if available. The primary objective of the study is to evaluate the appropriateness of phenytoin and fosphenytoin loading

doses based on available drug levels, with a subgroup analyses focused on obese and hypoalbuminemic patients. The secondary objectives are to analyze the frequency of seizure episodes and adverse drug events related to phenytoin doses and levels. Categorical data will be reported as percentages and continuous data will utilize means, medians, and standard deviations.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-074

Poster Title: Effect of midodrine on intravenous vasopressor usage in a community teaching hospital

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Purpose: Intravenous vasopressors are used to treat hypotensive patients who have not adequately responded to fluid resuscitation. Intravenous vasopressor doses are adjusted according to the patients' hemodynamic stability. Midodrine is an alpha-1-agonist increasing arterial and venous tone. Its use may potentially decrease intravenous vasopressor requirements. Literature has suggested that midodrine can decrease intravenous vasopressor requirements in surgical intensive care patients and in the recovery phase of septic shock. The purpose of this study is to determine if midodrine use results in a decrease in the dose of intravenous vasopressors in our medical intensive care unit.

Methods: This retrospective observational cohort study was submitted to the hospitals' institutional review board for exempt approval. Eligible patients, greater than or equal to eighteen years of age, using intravenous vasopressors (epinephrine, norepinephrine, phenylephrine, vasopressin, milrinone, dopamine, and dobutamine) and midodrine for hypotension in the intensive care unit will be identified by querying our electronic clinical information system from August 2015 to August 2016. Patients that did not receive midodrine for at least twenty-four hours will be excluded from the study. Information collected will include: patient age, gender, diagnosis, intravenous vasopressor(s) used, dosage of vasopressor given, duration of vasopressor therapy, dosage regimen of midodrine administered, duration of midodrine therapy, length of intensive care unit stay, and the length of hospital stay. The rate of the vasopressor infusion prior to midodrine administration will be compared to the rate of infusion twenty-four hours post midodrine initiation. Patient identifiers will not be recorded

and data will be stored in a secure and confidential manner on a password-protected computer.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-075

Poster Title: Retrospective evaluation of deep vein thrombosis management in the emergency department

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Purpose: Deep vein thrombosis was traditionally managed in the inpatient setting but outpatient management is becoming a more preferred therapy option with the availability of direct oral anticoagulants. The recent 2016 therapy guidelines recommend outpatient deep vein thrombosis management over inpatient management when possible due to the fact that outpatient management does not increase the risk of bleeding, mortality, or recurrent venous thromboembolism. The purpose of this study is to analyze retrospective data to determine the number of patients admitted to the hospital for deep vein thrombosis treatment that were eligible for outpatient management.

Methods: This IRB approved study will involve a retrospective chart review of all the patients treated for deep vein thrombosis from September 2015 to September 2016. Patient charts will be pulled using ICD-9 and ICD-10 codes for types of uncomplicated deep vein thrombosis. These charts will be reviewed to determine if patients were potential candidates for outpatient deep vein thrombosis management. Pre-specified inclusion and exclusion criteria will be used to assess eligibility. Some specific exclusion criteria include, but are not limited to, presenting with co-existing illness requiring hospitalization, risk/history/current bleed, immobilization, contraindications to anticoagulation, and renal dysfunction. Patients who exhibited at least one of the exclusion criteria were not be eligible for outpatient management. The following data will be collected: length of stay, anticoagulant agent received, history of bleed/clot events, previous DVT, specific labs, age, sex, weight, liver disease, and deep vein thrombosis location. All data will be recorded without patient identifiers and maintained confidentially.

Results: Pending

Conclusion: Pending

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-076

Poster Title: Evaluating therapeutic appropriateness and safety of benzodiazepines on a geriatric unit of a community hospital

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Purpose: Benzodiazepine use has been frequently associated with a potential increase in adverse events in the elderly. Many geriatric patients receive similar drug therapy to younger counterparts creating potential risk for adverse events, particularly falls. Sites with nurses improving care for health-system elderly (NICHE) hospital status strive to address these issues and improve geriatric care. The objective of this study is to evaluate the current use of benzodiazepines in a geriatric unit of a NICHE recognized hospital and determine if there are areas for improvement of care in this population.

Methods: In order to assess the appropriateness of benzodiazepine use, a retrospective chart review will be done utilizing the medication appropriateness index, a 10-item validated tool for measuring therapeutic appropriateness of a specific drug regimen. In this IRB approved study, the chart review will be conducted on patients 65 and older who were prescribed benzodiazepines from November 30th 2015 through April 31st 2016. Each patient's chart will be reviewed for medication appropriateness index score, length of stay, and adverse drug events to help identify key areas where pharmacy intervention will be most beneficial to improve and impact patient care.

Results: In progress

Conclusion: In progress

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-077

Poster Title: Analysis of fidaxomicin use and clinical outcomes in the treatment of recurrent Clostridium difficile infection

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Purpose: The incidence and severity of recurrent Clostridium difficile infection (RCDI) has become increasingly challenging to prevent and manage. Because the pathological process of RCDI is complex and involves altered intestinal flora, toxin production, and weakened host immunity, there is no consistent reliable data to suggest effective therapy or firm consensus on optimal treatment. The objective of this study is to analyze the appropriateness and clinical outcomes of fidaxomicin versus the typical standard of care (metronidazole and/or vancomycin) in patients treated for recurrent C. difficile infection.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to retrieve necessary information from all patients who had a positive stool toxin PCR assay and recurrent C. difficile infection from October 2012 to June 2016. The following data will be collected: patient age, gender, ethnicity, length of stay, location prior to admission, date of CDI diagnosis, antibiotic regimen, cost per case, broad-spectrum antibiotic use, anti-spasmodic use, anti-diarrheal use, and readmission for RCDI after completion of antibiotic regimen. Nurse and provider documentation will be reviewed to determine clinical and global cure. All data will be recorded into a standardized excel spreadsheet for analysis without patient identifiers and maintained confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-078

Poster Title: Formal Massive Hemorrhage Protocol Implementation and Associated Patient Care Outcomes

Primary Author: Matthew Fagnan, Englewood Hospital and Medical Center, NJ; **Email:** mfagnan@usj.edu

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Purpose: Patients who present with a massive hemorrhage can develop complications that may worsen their prognosis, and have an increased risk of mortality. The objective of this study is to evaluate outcomes before and after implementation of a formalized massive hemorrhage protocol at a 520 bed community hospital.

Methods: Patients will be identified and reviewed using the McKesson® electronic medical system. Massive hemorrhage bleed for the purpose of this study is defined as when a patient is given 8-10 units of blood within 24 hours or 4-5 units of blood within 1 hour. All patient's information will be kept confidential and no patient identifiers will be recorded during data collection. The primary endpoint will be 30 day inpatient mortality and the primary safety endpoint will assess late complications defined as respiratory failure, sepsis, thrombotic complications, and iron overloaded with the needed of a chelator. Chi square analysis will be used to compared the primary endpoint and if the number of patients studied is less than predicted than the fisher exact test will be used instead.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-079

Poster Title: Impact of pharmacist-guided infliximab dose rounding in an outpatient infusion center

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Purpose: Infliximab dose rounding is a commonly accepted practice across many institutions for cost containment. There is currently limited data on clinical and safety outcomes of this practice. The objective of this study is to determine whether pharmacist-guided infliximab dose rounding is clinically comparable to using exact dose in patients receiving infliximab for ulcerative colitis or Crohn's disease and to identify the cost difference between the two dosing methods in an outpatient infusion center at a community hospital.

Methods: A retrospective electronic chart review will be conducted to identify patients who received infliximab for ulcerative colitis or Crohn's disease over a six-month period. The following data will be collected for analysis: age, gender, height, weight, vitals, dosage and frequency of infliximab, use of medications for infusion reaction or hypersensitivity, and reported adverse medication events. All data will be handled with confidentiality. The primary outcome will be increase in dose or decrease in dosing frequency as a surrogate marker for inadequate response to therapy. The co-primary outcome will be cost difference between dose-rounded and exactly-dosed infliximab. The secondary outcome will be time to dose increase or decrease in frequency. Safety analysis will include use of medications for hypersensitivity or other adverse effects. Descriptive statistics will be used to summarize the findings of the study. Chi-square test will be used for analysis of nominal data and a student t-test will be used for analysis of continuous data with parametric distribution. The study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-080

Poster Title: Assessment of susceptibility patterns of pathogens causing urinary tract infections in kidney transplant recipients

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Additional Author (s):
Michael Wynd

Purpose: Urinary tract infections (UTIs) are the most common bacterial infection in kidney transplant recipients (KTRs) during the first year post-transplant. Management of UTIs in KTRs is challenging due to their immunocompromised status, possibility of drug-resistant pathogens, and exposure to routine post-operative antimicrobial prophylaxis . The primary objective of this study is to identify the incidence of UTIs in KTRs within the first year after transplant and evaluate the susceptibility patterns observed.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify adult KTRs who develop UTI within the first year post-transplant from May 1st 2013 to April 1st 2016. Data collected will include patient demographics, laboratory data, history of UTI and bladder dysfunction prior to transplant, immunosuppression (induction and maintenance), duration of indwelling catheter, presence of ureteral stent, date of UTI post-transplant, susceptibility pattern of isolated organism, antimicrobial prophylaxis empiric/definitive antibiotic treatment and duration, occurrence of delayed graft function, and patient and allograft outcomes. Data will be recorded and maintained in a protected database without patient identifiers. The primary endpoint is to identify the incidence of UTIs in KTRs within the first year after transplant and evaluate the susceptibility patterns observed. Secondary endpoints include patient and graft survival one-year post transplant. Data will be assessed with descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-081

Poster Title: Risk factors for vancomycin-induced nephrotoxicity in pediatric patients

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Additional Author (s):
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Purpose: Nephrotoxicity is a known complication of vancomycin therapy in the pediatric patient population. In several studies, the incidence of vancomycin-induced nephrotoxicity (VIN) has shown to increase with higher total daily doses and higher trough concentrations. In our institution, there is hesitancy to increase daily doses above 100 mg/kg/day or 4-grams daily in adults. There is also apprehension surrounding the use of every 6 hour dosing intervals in adolescent patients due to nephrotoxicity concerns. The objective of this study is to determine the incidence of VIN and evaluate potential risk factors for nephrotoxicity in the neonatal and pediatric patient populations.

Methods: This retrospective chart review will be submitted to the Institutional Review Board for approval. Electronic medical records will be used to identify pediatric inpatients less than 18 years of age who received at least 48 hours of vancomycin therapy. Patients will be excluded if their baseline serum creatinine (SCr) is above the normal level for their age group or lack initial and/or at least one follow-up SCr level. Data such as patient demographics, underlying illnesses, concurrent medications and vancomycin regimens will be collected. This study will analyze the rates of vancomycin-induced nephrotoxicity in the pediatric and neonatal patient populations. For pediatric patients, nephrotoxicity will be defined as an increase greater than or equal to 0.5 mg/dL in SCr values or 50 percent over baseline values, persisting for at least 48 hours. In neonates, nephrotoxicity will be defined as an increase in SCr greater than or equal to 0.3 mg/dL or 50 percent over baseline values continuing at least 48 hours. Secondary objectives will evaluate risk factors for nephrotoxicity including age groups, dosing intervals, underlying comorbidities, and rate of early versus late nephrotoxicity in the pediatric and neonatal cohorts. Rate of return of baseline renal function will also be evaluated.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-082

Poster Title: Safety and efficacy of direct oral anticoagulants in multiple myeloma patients

Primary Author: Sheryl Mathew, Hackensack University Medical Center, NJ; **Email:** sheryl.mathew@hackensackmeridian.org

Additional Author (s):
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Purpose: Multiple myeloma patients are at high risk of venous thromboembolism (VTE) as well as bleeding complications, due to disease-related factors and chemotherapy agents. Direct oral anticoagulants (DOACs), which include rivaroxaban, apixaban, edoxaban, and dabigatran, are treatment options for VTE. However, current treatment guidelines do not support the routine use of DOACs in oncology patients because there is limited evidence. Nevertheless, DOACs are frequently prescribed in patients with multiple myeloma due to ease of dosing and administration and lack of routine monitoring. The objective of this study is to assess the safety and efficacy of DOACs in multiple myeloma patients.

Methods: We are conducting a retrospective chart review using the electronic medical record to identify multiple myeloma patients who received DOACs from June 2015 to June 2016. Prior to initiation, this study will be submitted to the Institutional Review Board for approval. Patients will be included if they are greater than or equal to 18 years old, have a diagnosis of multiple myeloma, and have been treated with a DOAC. Patients will be excluded if their sole indication for a DOAC is atrial fibrillation or if they received hemodialysis. The following data will be collected: patient's age, sex, height, weight, serum creatinine, coagulation parameters, DOAC agent and dosing, multiple myeloma therapy, concomitant anticoagulant or antiplatelet agents, concomitant medications with potential drug-drug interactions with DOACs, incidence of VTE, and incidence of major and minor bleeding. All data will be recorded without patient identifiers and will be maintained in a password-protected database. Primary outcome will be incidence of bleeding (major and minor), and secondary outcome will be incidence of VTE. Descriptive statistics will be used to describe study results.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 8-083

Poster Title: Evaluation of pain management prescribing patterns in a community teaching hospital

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Additional Author (s):
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Purpose: Pain management is a complex health care challenge. Prescription opioids have been a necessary part of pain management in hospitals however, these drugs also carry serious potential for misuse, addiction, overdose, and death. Despite many advances in pain treatment, opioids remain the mainstay therapy in relieving most types of pain with no associated organ toxicity when used appropriately. The purpose of the study is to evaluate pain management prescribing in an acute care community teaching hospital.

Methods: This is a retrospective study that will be conducted from June to September 2016. The patient population will include patients greater than 18 years of age, admitted to the general medicine floors, who received at least one dose of an oral or intravenous opioid medication. Exclusion criteria include patients admitted to the intensive care, behavioral health, or maternity units, post-surgical patients, patients on a patient controlled analgesia pump or on palliative care service. The primary outcome of the study is to evaluate the number of initial pain medication orders that include mild, moderate, and severe orders in hospitalized patients. The secondary outcomes are documented opioid status, types of pain medications, medication to pain score correlation, and interventions made by pharmacists. A data collection sheet will be utilized to collect patient demographics, pain scores, past medical history, and home and inpatient medications related to pain management.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-084

Poster Title: New analysis of pharmacist renal dosing interventions (NEPHRI) study

Primary Author: Michael Casias, Hunterdon Medical Center, NJ; **Email:** mcasias@hhsnj.org

Additional Author (s):
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Purpose: There are a myriad of medications that require dose adjustments in patients with renal insufficiency to prevent accumulation, which could lead to serious adverse events. Pharmacists play a vital role to ensure dosing of medications are appropriate based on indication and the patients clinical status. Institutions have therefore implemented policies for pharmacists to automatically adjust selected medications based on their current renal function. The purpose of this study is to evaluate pharmacist interventions on medications requiring dose adjustments for renal impairment.

Methods: This is a retrospective study that will be conducted from April to September 2016. The primary outcome is to assess the number of interventions pertaining to renal dose adjustments made by profiling pharmacists for select medications. Secondary outcomes include the number of follow-up interventions by pharmacists upon improvement in renal function and reasons for rejection of pharmacist recommendations by prescribers. Patients in the study will include those 18 years of age and older who received one of the following medications: meropenem, famotidine, ciprofloxacin, piperacillin/tazobactam, and ampicillin/sulbactam in the study time frame. Patients will be excluded if they have end-stage renal disease on dialysis, receive one-time study medication orders, or if they are admitted to behavioral health, maternity, or pediatrics. The hospital's electronic medical record will be utilized to collect the following data: age, gender, height, weight, past medical history, serum creatinine, and blood urea nitrogen. Renal function will be calculated using the Cockcroft-Gault equation unless the patient is experiencing an acute kidney injury in which the modification of diet in renal disease equation will be used to assess renal function.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-085

Poster Title: Evaluation of antibiotic de-escalation and ordering practices in a community teaching hospital

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Purpose: Antibiotic stewardship encompasses a variety of initiatives to judiciously utilize antimicrobial agents. Practices such as prospective review after two to three days of admission serve to evaluate the need for broad-spectrum agents and provides opportunity to de-escalate therapy. At our institution, we have implemented a three day stop order for all intravenous antibiotics to help prompt re-evaluation of treatment options. The purpose of this study is to evaluate adherence to this initiative.

Methods: This is a retrospective chart review of patients who received intravenous antibiotics from July to September 2016. The primary outcome is to determine how frequently antibiotics are being de-escalated on day three of therapy. The secondary outcome is to determine the frequency of the three-day duration of therapy leading to missed doses. Patients will be included if they are 18 years of age or older and received empiric intravenous antibiotics for three days. Patients will be excluded if they are pregnant or admitted to behavioral health or maternity units. The patient's electronic medical record will be utilized to collect the following data: age, gender, renal function (creatinine clearance using Cockcroft-Gault equation), site of infection, culture and sensitivity results, and antibiotics administered. De-escalation will be identified by collecting data on duration of antimicrobial therapy, appropriateness of therapy based on cultures and sensitivities, and change in antibiotic, noting the day of antibiotic therapy that the change was made.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-086

Poster Title: Novel oral anticoagulants (NOACs) in post-operative atrial fibrillation (POAF) following coronary artery bypass graft (CABG) surgery

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Purpose: POAF occurs in approximately one third of patients after CABG surgery. For risk reduction of stroke in patients with atrial fibrillation, guidelines recommend the use of oral anticoagulation. Patients with planned major surgery however, were excluded from clinical trials of the NOACs. The use of dabigatran, rivaroxaban, and apixaban for POAF is therefore controversial, but may offer significant advantages over warfarin including rapid onset and potential for earlier discharge, fewer drug interactions, and no coagulation monitoring requirement. The purpose of this study is to retrospectively evaluate the safety and efficacy of the NOACs in new onset POAF following CABG surgery.

Methods: This study is undergoing review for Institutional Review Board approval. A report will be obtained by retrospective chart review of CABG cases in which patients developed POAF following surgery. All charts from the two year study period will be accessed through the institution's electronic medical record system and will be recorded without patient identifiers. The study population will only include cases of elective, isolated CABG surgery. Data collected will include baseline patient demographics, surgery and discharge dates, past medical history of myocardial infarction, stroke, hypertension, chronic kidney disease, diabetes mellitus, pre-operative history of atrial fibrillation, and occurrence of thrombotic or bleeding events. Patients who have an active hemorrhage or gastrointestinal ulcer immediately prior to surgery will be excluded. Anticoagulant related data to be collected includes post-operative start date, agent prescribed, NOAC dosing regimen, and bridging with parenteral anticoagulant. The primary endpoints of the study are stroke, systemic emboli, and bleeding events. Secondary endpoints are hospital length of stay following CABG surgery and 30-day readmission to any of the seven

hospitals in this health system. The authors hypothesize that there will be no difference in thrombotic events or major bleeding when comparing NOACs and warfarin, thus demonstrating efficacy and safety against the standard of care and offering more options for the anticoagulation treatment of POAF after CABG surgery.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-087

Poster Title: Dexmedetomidine at high doses for long-term continuous infusion in the pediatric intensive care setting

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Additional Author (s):
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Purpose: Dexmedetomidine is a selective alpha-adrenergic agonist with sedative, anxiolytic and analgesic properties. Currently, it is FDA indicated for sedation for intubation, mechanical ventilation, and procedural sedation in non-intubated patients. Dexmedetomidine has a favorable side effect profile compared to other sedatives; however its use is only approved for no more than 24 hours. Several adult studies have demonstrated the safety and efficacy of dexmedetomidine for greater than 24 hours, but there is limited pediatric literature. This study was designed to determine the safety of dexmedetomidine at doses higher than 0.7 mcg/kg/hour for greater than 24 hours in critically ill pediatric patients.

Methods: The institutional review board will review this retrospective chart review for approval. The primary outcome includes the overall safety of high-dose dexmedetomidine continuous infusion in pediatric patients for greater than 24 hours. Safety will be characterized by both the value and time of changes in blood pressure or heart rate which are not within the normal range. Normal ranges will be based on the patients' stature and weight-per-age percentiles as defined by the Centers for Disease Control and Prevention (CDC). Secondary outcomes will include: adverse events, need for drug discontinuation, and drug withdrawal symptoms. The following data will be collected: age, gender, height, weight, admission diagnosis, initial dose, maintenance and maximum dose of dexmedetomidine. Duration, method (wean or abrupt), reason for discontinuation, adverse events, blood pressure, heart rate and withdrawal symptoms will also be collected. The data will be analyzed to determine any observable decrease in blood pressure and heart rate with high doses of dexmedetomidine.

Continuous variables, such as blood pressure and heart rate will be evaluated using the Shapiro-Wilk test, and categorical variables, such as gender and adverse events will be tested using the Chi-square test.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-088

Poster Title: Outcome Data for the Treatment of Klebsiella Pneumoniae Carbapenamase Urinary Tract Infections with Fosfomycin

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Purpose: Klebsiella pneumoniae carbapenemase (KPC) producing organisms are becoming increasingly prevalent, particularly as a cause of urinary tract infections (UTIs). These bacteria have limited treatment options and require the use of less conventional antibiotics, such as polymyxin. Fosfomycin, an antibiotic discovered over 40 years ago, has recently made a comeback as a treatment option for KPC UTIs. Fosfomycin has shown great in-vitro potential in treating KPC UTIs; however, in-vivo data is lacking. Therefore, this study would be one of the first to observe clinical outcomes in patients with KPC UTIs treated with fosfomycin.

Methods: The institutional review board will approve this retrospective observational study. Adults admitted to our institution with a KPC UTI (as verified by the modified Hodge test) and treated with fosfomycin from January 1, 2006 to July 1, 2016 will be included in the study. Patients will be excluded if they presented with KPC bacteremia from any pathogenic source. The primary endpoint is to verify the resolution of symptoms from a KPC UTI after initiation of therapy in the inpatient setting. Secondary endpoints include rate of discontinuation of fosfomycin therapy, rate of readmission for a KPC UTI within 60 days from beginning fosfomycin therapy, and number of days from the start of fosfomycin to resolution of symptoms. Evaluation of antibiotic therapy and resolution of symptoms will be performed by retrospective review of the patient chart and discharge medication history. Clinical outcomes of this study will be based on the resolution of symptoms and/or failure of therapy. Patients will be considered treatment failures if they had to be switched to a different antibiotic to treat the KPC or were readmitted to our institution for a KPC UTI within 60 days of the start of their

fosfomycin treatment. Patient data that will be collected includes but is not limited to patient demographics, medication history, and medications administered throughout the hospital course.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-089

Poster Title: Evaluation of midodrine use on duration of vasopressor therapy and intensive care unit (ICU) length of stay in adult patients at a community hospital

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Purpose: Patients requiring ICU level of care are exposed to an environment with established elevated mortality risks inherent to the unit. Despite improvement, some patients remain in the ICU exclusively due to hemodynamic instability and require vasopressor support. Other patients may exhibit signs of vasopressor resistance prolonging their ICU stay. Midodrine is an oral alpha-1 agonist used at this institution to help wean patients off vasopressors and downgrade level of care. The purpose of this study is to determine if midodrine decreases both the duration of vasopressor therapy and ICU length of stay in patients requiring vasopressors.

Methods: This was an IRB approved retrospective chart review assessing the utilization of oral midodrine in ICU patients requiring vasopressors in a community hospital. Patients 18 years of age or older admitted to the ICU for more than 48 hours between October 1, 2015 and April 1, 2016, requiring vasopressors for more than 24 hours were included in the study. There were two comparator groups consisting of patients requiring vasopressors in the ICU who received at least three doses of scheduled midodrine, and patients requiring vasopressors who did not receive midodrine. Patients were excluded if they were taking midodrine prior to admission, received hemodialysis treatment of any kind, were taking any other oral vasopressor-like medication, or were ordered midodrine as needed. Information was collected from the electronic reporting system and included ICU time in, ICU time out, vasopressor start/stop times and dose, and midodrine start time, dose, and number of doses administered. Data was analyzed to determine number of vasopressor hours and length of ICU stay (days) based on the two comparator groups.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-090

Poster Title: Comparison of ceftolozane/tazobactam to alternative therapy for treatment of multi-drug resistant Pseudomonas aeruginosa or extended-spectrum beta-lactamase infections.

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Purpose: One of the largest challenges facing healthcare today is the evolution of multi-drug resistant (MDR) Gram-negative organisms such as Pseudomonas aeruginosa (PSA). Ceftolozane/tazobactam (CTZ) is a broad-spectrum cephalosporin antibiotic with activity against MDR PSA as well as extended-spectrum beta-lactamase (ESBL) Enterobacteriaceae. In March 2016, CTZ was added to the formulary at our institution to treat MDR organisms including MDR PSA. The purpose of this study is to evaluate the appropriateness and effectiveness of ceftolozane/tazobactam compared to alternative therapy in treating MDR PSA or ESBL infections.

Methods: This study is an Institutional Review Board approved retrospective evaluation of patients receiving ceftolozane/tazobactam for MDR PSA or ESBL infections. Inclusion criteria are patients admitted with age 18 years or older with documented PSA or ESBL infections receiving CTZ. These patients are matched based on age, sex, renal function and type of infection with patients who received alternative therapy. Patients are excluded if they are immunocompromised, pregnant, or had any previous exposure to CTZ. The primary outcome of the study is to evaluate appropriate therapy utilization of CTZ, which is achieved if institutional criteria and protocol are followed in prescribing CTZ. Subgroup analysis is conducted to evaluate clinical cure, length of therapy, and length of stay in lower respiratory tract infections. Clinical cure is defined as resolution of signs and symptoms with radiographic improvement or microbiological cure at the end of therapy. The secondary outcome of the study is in-hospital mortality and 30 day readmission. A pharmacoeconomic analysis is performed evaluating cost-comparison between the treatment groups.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-091

Poster Title: Medication use evaluation of paliperidone palmitate intramuscular injection in a health system

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Purpose: The initiation of paliperidone palmitate intramuscular (IM) injection follows a specific protocol that is necessary to ensure the efficacy of the drug. The objective of this evaluation is to determine adherence to the institution's approved initiation protocol of paliperidone palmitate IM injection.

Methods: This is an IRB approved retrospective chart review that will be conducted with patients admitted to our health system, who received paliperidone palmitate 234 mg and 156 mg IM injections, between October 1, 2014 and September 30, 2016. Medical record numbers of patients will be identified through the health system's electronic reporting system. The following data will be collected: diagnosis at time of initiation, creatinine clearance (calculated via the Cockcroft-Gault equation), documentation of previous tolerability test with oral risperidone or paliperidone, patient's insurance plan, administration date and time of both injections, location of the injection site, use of other antipsychotics concurrently with this drug (excluding as needed medications), ordering physician/service, and if the oral overlapping therapy was discontinued. All data will be recorded without patient identifiers and maintained confidentially. For each parameter, data will be sorted to determine the percent compliance with established medication use evaluation (MUE) criteria in accordance to the pharmacy and therapeutics committee approved protocol. Analysis and discussion to follow.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-092

Poster Title: Evaluating the appropriateness of direct oral anticoagulants in patients with atrial fibrillation

Primary Author: Sajani Patel, Monmouth Medical Center, NJ; **Email:** sajani.patel@rwjbh.org

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Purpose: Direct oral anticoagulants (DOACs) are indicated for the management of non-valvular atrial fibrillation (NVAF) for patients with a CHA2DS2-VASc score of one or more. However, there are patients who are not treated or are prescribed incorrect dose of these agents leading to adverse effects. The objective of this study is to determine if patients with NVAF are on an appropriate anticoagulant and dose based on patient specific factors.

Methods: This retrospective study has been submitted to the Institutional Review Board and is awaiting approval. MedeAnalytics will be used with the electronic medical records to identify patients with a diagnosis of NVAF from June 2016 to August 2016. Data collected for each patient will include age, gender, weight, serum creatinine, and a CHA2DS2-VASc score. Electronic medical charts and medication administration records will be reviewed to evaluate if patients were treated with a DOAC during their hospitalization. The primary endpoint is to determine if these patients were on an appropriate dose of an anticoagulant and if they were appropriately treated based on the CHA2DS2-VASc score. To determine if patients were correctly treated, the data collected, documented medical notes for or against the use of anticoagulation, and the 2014 AHA/ACC/HRS Guideline for the Management of Patients with Atrial Fibrillation will be taken into consideration. The secondary endpoint is to look for evidence of treatment failure in these patients such as documented symptoms of stroke, gastrointestinal bleeds, or venous thromboembolisms to evaluate the appropriateness of their anticoagulant therapy. Descriptive statistics will be used to analyze the data.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-093

Poster Title: Retrospective comparison of rapid loading of diazepam versus a lorazepam infusion for the management of severe alcohol withdrawal

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Purpose: Benzodiazepines are the mainstay of treatment for alcohol withdrawal syndrome (AWS), however there are no set guidelines dictating a standardized treatment regimen. This study aims to compare two methods of managing severe alcohol withdrawal syndrome in critically ill patients: a lorazepam infusion versus rapid loading of escalating doses of diazepam.

Methods: This study has received IRB approval. A retrospective chart review will be conducted to collect data for patients at least 18 years of age who were admitted into the intensive care unit (ICU) for AWS and were managed on either a lorazepam infusion or rapid loading of escalating doses of diazepam. Data will be collected from medical records, medication administration records, progress notes, laboratory data, and discharge notes. The primary endpoint will be the ICU length of stay. The secondary outcomes include the total amount (mg) of each drug used, evidence of adverse drug reactions (changes in serum creatinine, increases in serum osmolality, decreases in serum bicarbonate level), and the use of adjuvant agents for management. Patient identifiers will be removed from collected data and limited to demographic qualifiers.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-094

Poster Title: Impact of a pharmacist-managed antimicrobial stewardship initiative for intravenous to oral conversion at a large teaching institution

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Purpose: Major regulatory agencies recently enacted conditions of participation requiring healthcare institutions to take an active role in antimicrobial stewardship. Although stewardship programs are comprised of several aspects, conversion of intravenous (IV) medications to the oral (PO) route is beneficial in reducing costs, increasing workflow, decreasing risk of line infections, and reducing discomfort. While our institution grants pharmacy the privilege to automatically convert certain agents from IV to PO, the documented activities performed remain few. The objective of this study is to evaluate the impact of targeted education on staff clinical pharmacists to convert eligible intravenous antimicrobials to equivalent oral formulations.

Methods: This study has been submitted to the Institutional Review Board for approval. In this single-center prospective review, all orders for IV formulations of azithromycin, doxycycline, fluconazole, levofloxacin, linezolid, and metronidazole for patients admitted to an adult inpatient service will be identified using a web-based, real-time clinical surveillance tool. Orders will be reviewed for automatic IV to PO conversion eligibility using inclusion and exclusion criteria set forth by a policy approved by the institution's Pharmacy and Therapeutics Committee. A targeted one-on-one education will be provided to staff clinical pharmacists on evaluation of eligibility requirements, the mechanics around IV to PO conversions, and documentation of activities. Additionally, a pre- and post-education questionnaire will evaluate the pharmacist's knowledge of the IV to PO policy and their satisfaction with the education provided. Post-education, staff clinical pharmacists will be performing IV to PO conversions daily for an allotted time. Two conversion activities per pharmacist per week will be evaluated, and feedback will be provided to ensure quality. Additionally, median time to conversion to oral

formulation and total cost savings will be evaluated. Data will be collected into spreadsheets and outcomes analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-095

Poster Title: Evaluation of an educational intervention on adherence to the American College of Chest Physicians (ACCP) recommendations for initiation of anticoagulants in post-surgical patients

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Purpose: ACCP highlights the need to initiate anticoagulation in post-surgical patients who warrant therapy. Despite publication of guidelines and pressure from accrediting bodies to administer anticoagulation to surgical patients on the appropriate day, many institutions continue to display suboptimal compliance with ACCP recommendations. The purpose of this study is to evaluate the impact of pharmacist education on physician compliance with ACCP recommendations for initiation of anticoagulation in post-surgical patients and assess incidence of venous thromboembolism events and bleeding pre- and post- intervention.

Methods: This single centered educational study will include hospitalized surgical patients who are 18 or older, unless they are actively bleeding, pregnant, receiving palliative care, in a hypercoagulable state, undergoing transplant, on extracorporeal membrane oxygenation, have an implanted device, or length of stay less than 2 days. The following information will be collected from their electronic medical records (EMRs): demographics, length of stay, renal function, oncologic diagnoses, procedure, platelets, anticoagulant regimen and documentation of new VTE and bleeding following surgery. For the pre-education phase, 125 hospitalized surgical patients meeting the above criteria will be chosen randomly from a list of inpatient surgeries from October 15 to December 15, 2016. From December 15, 2016 to January 31, 2017 a brief educational session will be provided to physicians, supplemented by an anticoagulation pocket card. During the last two weeks of the educational phase, physicians will be contacted with therapeutic recommendations if discrepancies are found in anticoagulant orders for post-surgical patients. For the post-educational phase 125 hospitalized surgical patients meeting the above criteria will be chosen randomly from a list of inpatient surgeries from February 1 to April

30, 2017. Compliance rates with ACCP guidelines, appropriateness of anticoagulant regimen, and VTE/bleeding incidence will be compared before and after the intervention. This study has been submitted for review to the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-096

Poster Title: Impact of multidisciplinary antimicrobial stewardship intervention on appropriate discontinuation of antibiotics for early onset sepsis in the neonatal intensive care unit

Primary Author: Vaibhavi Bhavsar, Robert Wood Johnson University Hospital, NJ; **Email:** vaibhibhav@gmail.com

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Purpose: Early onset sepsis occurs within the first 72 hours of life. Empiric antibiotic therapy commonly consists of ampicillin and gentamicin. In certain clinical situations, a third generation cephalosporin may be substituted. The American Academy of Pediatrics recommends discontinuation of antibiotics after 48 hours if the probability of sepsis is low. Prolonged antibiotic use in neonates is associated with an increased risk of late onset sepsis, necrotizing enterocolitis, and mortality. The purpose of this research is to assess the impact of the intervention on duration of empiric antibiotic therapy for early onset sepsis in the neonatal intensive care unit (NICU).

Methods: IRB submission is in progress for this before-and-after observational study. All NICU patients who received antibiotics for empiric therapy of early onset sepsis will be included. Baseline characteristics will be collected, including but not limited to: age, duration of antibiotics, culture results at 48 hours, and demographic data. A multidisciplinary approach will be utilized to create a protocol to guide decisions for discontinuation of antibiotics. The pre-intervention group, which will serve as a historical control, will include patients who received antibiotics prior to protocol implementation. The consecutive sample population following protocol implementation will be the post-intervention group. Post-intervention data will be collected and compared to the baseline data. This study will evaluate the impact of the intervention on the rate of appropriate discontinuation of antibiotics.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-097

Poster Title: Clinical outcomes in patients with Staphylococcus aureus bacteremia and a blinded vancomycin minimum inhibitory concentration (MIC)

Primary Author: Shaili Adani, Robert Wood Johnson University Hospital, NJ; **Email:** shaili.adani@rwjbh.org

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Purpose: Recently, there have been several inconsistent analyses on the relationship between vancomycin MIC and clinical outcomes including treatment failure and mortality. Some claim higher rates of vancomycin treatment failure with methicillin-resistant Staphylococcus aureus (MRSA) infections despite the organism being fully susceptible, which is denoted by a vancomycin MIC less than or equal to 2, whereas others show no such association. The objective of this study is to determine if treatment with vancomycin is associated with inferior clinical outcomes in patients with MRSA bacteremia with a vancomycin MIC equal to 2.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a retrospective, observational cohort study of patients with MRSA bacteremia treated with vancomycin from January 2013 to August 2016. There will be two study arms, with the control arm having MRSA isolates with a vancomycin MIC less than 2 and the active arm having an MIC equal to 2. The inclusion criteria will entail patients with MRSA bacteremia and those that have been treated with vancomycin for greater than or equal to 7 days. The exclusion criteria will entail patients with an age less than or equal to 18 years, with an index blood culture from an outside hospital, with a polymicrobial bacteremia, and died, were discharged, or sent to hospice within 24 hours. Analysis of baseline characteristics will include demographics (age, gender, weight), the Charlson comorbidity index, the Pitt bacteremia score, potential sources of infection, presence of endocarditis, and intensive care unit admission date when applicable. The primary outcome will be mortality within 30 days. Secondary outcomes include microbiologic data including time to clearance of organism from blood cultures when applicable, recurrence within 30 days from completion of therapy, length of stay from index blood culture, and re-hospitalization within 30 days.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-098

Poster Title: Evaluation of the impact of levetiracetam therapeutic drug monitoring on dosing adjustments

Primary Author: Rajeev Shah, Robert Wood Johnson University Hospital Somerset, NJ; **Email:** rajeev.shah@rwjbh.org

Additional Author (s):
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Purpose: The advent of therapeutic drug monitoring lead to advances in managing anti-epileptic therapy by creating well-defined reference ranges for the first generation anti-epileptic drugs. Levetiracetam, a second generation agent, does not require routine therapeutic monitoring because it lacks the well-defined reference ranges of its predecessors. There is little literature to support the correlation between serum concentration and efficacy or toxicity. Therefore, the utility of therapeutic drug monitoring is limited to assessing adherence. The objective of this study is to examine the effect of therapeutic drug monitoring on the frequency of dosing changes in hospital inpatients with known adherence.

Methods: This study was approved by the Institutional Review Board. A retrospective chart review of randomly selected patients who received levetiracetam therapy from January 2013 to January 2016 will be performed. The study group will consist of subjects in whom a levetiracetam serum concentration was obtained, and the control group subjects will be those without a serum drug concentration. The incidence of inappropriate dosing changes will be compared between the two groups. An inappropriate dosing change will be defined as a change without clinical rationale or without a documented incidence of a breakthrough seizure. Adult subjects with a history of seizure disorders who received any formulation of levetiracetam for greater than 48 hours will be included. Because levetiracetam is renally dose adjusted, those with unstable renal function as defined by doubling of serum creatinine, absolute increase in serum creatinine of 0.5 mg/dL, or documented urine output of less than 0.5 mL/kg/hour will be excluded. A total of 250 patients will be enrolled with 125 in each arm of the study. The data will be summarized using descriptive statistics. The categorical data will be analyzed using an

uncorrected Chi squared test. Continuous data will be analyzed with an independent sample t-test. We will also construct a logistic regression to identify predictors of levetiracetam levels.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-099

Poster Title: Evaluation of running a decision support alert in test mode to determine opportunities to reduce supratherapeutic acetaminophen dosing in the inpatient setting

Primary Author: Juanqin Wei, Robert Wood Johnson University Hospital Somerset, NJ; **Email:** stephanie.wei@rwjbh.org

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Purpose: Acetaminophen is a widely used medication available in numerous formulations and combinations. Supratherapeutic doses can cause serious adverse events including coagulopathy, hepatic encephalopathy, and liver failure. Decision support alerts are commonly used to prevent dosing errors. However, reliance on these alerts has led to alert fatigue among health care professionals. The objective of this study is to examine the effect of running a decision support alert in the background to determine and correct root causes of supratherapeutic dosing to reduce incidence proactively, rather than reactively.

Methods: This is a retrospective cohort study examining supratherapeutic acetaminophen dosing among inpatients at the Robert Wood Johnson University Hospital Somerset facility. A decision support alert was run in test mode in July 2014 to observe the incidence of supratherapeutic dosing and used to determine and address root causes. This study will examine all patients who received a total daily acetaminophen dose of greater than 4 grams before and after running the decision support alert in test mode during the time periods of January 1, 2014 to June 4, 2014 and January, 2015 to June 4, 2015. Data from both time periods will be analyzed and compared to determine the impact from running the decision support alert in test mode. Patients were identified using the hospital electronic medical record and discharge database. Combination acetaminophen medications, standing orders of acetaminophen, and as-needed orders of acetaminophen were all included. The proportion of patients on multiple acetaminophen-containing medications and the type of medication order will also be examined. Results will be stratified by patient age and liver disease.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Case Report

Session-Board Number: 8-100

Poster Title: Risk of cardiovascular risk calculators

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Additional Author (s):
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Purpose: This case highlights the potential hazard of using atherosclerotic cardiovascular disease (ASCVD) risk calculators without employing clinical judgment in patients who present to their primary care physicians. The patient is a healthy male with no history of coronary artery disease, hypertension, diabetes, smoking, or family history of premature ASCVD. In 2009, statin therapy was initiated, but it was recently questioned whether this patient was an appropriate candidate for statin therapy based on his laboratory values and past medical history. The patient is 74 years old with a systolic blood pressure of 115 mmHg, an LDL of 115 mg/dL, a total cholesterol of 234 mg/dL, and an HDL of 99 mg/dL. Using the American Heart Association ASCVD risk calculator, his 10-year ASCVD risk was calculated to be 16.5%. This was indication for at least moderate-intensity statin therapy according to the American College of Cardiology/American Heart Association guidelines, despite his being healthy and having no clinical ASCVD risk factors. If his parameters were “optimized” to the risk calculator recommended levels of total cholesterol of 170 mg/dL, HDL of 50 mg/dL, and systolic blood pressure of 110 mmHg, his ASCVD risk would increase to 17.4%. Similarly, using the Framingham Coronary Heart Disease Risk Score, his 10-year risk of heart attack or death with his existing risk parameters is 7.9%; however, once “optimized” to the recommended levels, his risk increases to 13%. This case report demonstrates both the variability and lack of accuracy of risk calculators in stratifying certain patients for statin therapy. Healthcare providers can utilize these tools to help guide treatment, but must recognize that clinical judgment is key to making appropriate decisions regarding patient pharmacotherapy.

Methods:

Results:

Conclusion:

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Descriptive Report

Session-Board Number: 8-101

Poster Title: Darbepoetin as a substitute for epoetin alfa: Developing a hospital-based protocol for patients requiring bloodless surgery.

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Purpose: Based on the significant risk of blood loss associated with certain surgical procedures, assuring that adequate hemoglobin levels are achieved preoperatively is critical to reduce adverse outcomes. Some patients will not accept certain blood products according to religious beliefs. Utilizing erythropoietin stimulating agents (ESAs), is one option in managing patients with moral objection to receipt of human blood product derivatives. Epoetin alfa is commonly used in preparation for bloodless surgical procedures; however, it does contain albumin, a minor blood fraction. Darbepoetin does not contain albumin, making it a potential treatment option for patients with moral objections to epoetin alfa therapy.

Methods: During July 2016, our institution experienced three emergency cardiac intervention cases requiring bloodless surgery whereby the patients requested the use of darbepoetin in lieu of epoetin alfa. A search of the medical literature, utilizing Medline, PubMed, and Google Scholar was performed to identify available literature concerning the management in bloodless medical and surgical procedures. Meetings with the physician team responsible for bloodless surgery were held for input and evaluation. Based on the literature and physician experiences, a hospital protocol will be developed. Once an appropriate dosing regimen of epoetin alfa is agreed upon, an equivalent darbepoetin dose will be derived. In the absence of clinical data to support use of darbepoetin in bloodless surgery patients, we will be applying the dosing regimen suggested in the package insert, identifying the appropriate equivalent dose of darbepoetin as compared to epoetin alfa. The protocol will stratify patients based on time prior to surgery and baseline hemoglobin level to identify the proper epoetin alfa dose. Other auxiliary medications needed to be utilized in conjunction with the ESA will be included, such as iron supplementation, vitamin B12, and folic acid.

Results: in progress

Conclusion: in progress

Submission Category: General Clinical Practice

Submission Type: Case Report

Session-Board Number: 8-102

Poster Title: Stevens-Johnson syndrome associated with chlordiazepoxide

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Additional Author (s):
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Purpose: Stevens-Johnson syndrome (SJS) is a rare but severe skin reaction resulting from drug exposure or infection. Classic drugs with the risk to induce SJS include anticonvulsants, oxicam type nonsteroidal anti-inflammatory agents, and anti-infective sulfonamides. We describe a case of chlordiazepoxide associated SJS. This case provides insight into a serious adverse drug reaction secondary to a drug not commonly associated with SJS.

Methods:

Results:

Conclusion:

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-103

Poster Title: Clindamycin use in the pediatric population

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Additional Author (s):
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Purpose: Assess appropriate utilization of clindamycin in the pediatric population due to the increasing resistance of Staphylococcus aureus.

Methods: In this IRB approved retrospective chart review from July 1, 2015 to June 30, 2016, we will evaluate antibiotic prescribing practices for pediatric patients from 1 month of age to 18 years old with a skin and soft-tissue infection (SSTIs) treated at Saint Barnabas Medical Center. Patients will be excluded if they had diabetes, a perirectal abscess, decubitus ulcer, or pharyngeal abscess. The primary end point is to evaluate the percentage of cultures growing community acquired methicillin-resistant Staphylococcus aureus (CA-MRSA) that are resistant or have inducible-resistance to clindamycin. Secondary endpoints are to determine the percentage of SSTI cultures that are MRSA (versus other causative pathogens) and whether de-escalation or antibiotic adjustments were made. Descriptive statistics will be used for all data collected in this study.

Results: Research is currently under review.

Conclusion: Non-applicable.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-104

Poster Title: Implementation of a medication review service for patients with enteral tubes in a community teaching hospital

Primary Author: Olawonuola Abiona, Saint Barnabas Medical Center, NJ; **Email:** olawonuola.abiona@gmail.com

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Purpose: Inappropriate enteral tube administration of medications can result in occluded tubes, altered clinical response, and an increase in adverse effects. An internal retrospective chart review was performed showing that 43% of patients on enteral tubes received ≥1 medication that should not be crushed. The objective of this study is to implement a hospital-wide medication review service for patients with enteral tubes to improve their safety.

Methods: This study, approved by the Saint Barnabas Medical Center IRB, is designed to implement and assess the progress of our new crushed medication consult service. Implementation started with education to pharmacists, prescribers, and nurses, reviewing the new program. A list of medications that should not be crushed was developed based upon guidance from the Institute for Safe Medication Practice. An automatic substitution list of medications was created and approved by the Pharmacy and Therapeutics Committee that would allow pharmacists to interchange medications to liquid or crushable formulations. An electronic task list was also created to alert pharmacists about patients who had an enteral tube placed requiring medication review and potential substitution. In addition, the list also identifies patients whose tubes were removed in order to place them back on their original medications. Study participants are patients at our institution who had and enteral tube placed during the pilot portion of the program. They will be monitored to identify if their medications were changed to the proper doses and/or dosage forms as defined by our protocol. Data will also be analyzed to assess if the pharmacist compliance with the program.

Results: n/a

Conclusion: n/a

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-105

Poster Title: Evaluation of diuretics in admitted congestive heart failure patients

Primary Author: Dimple Patel, Saint Barnabas Medical Center, NJ; **Email:** dimpleppatel8@gmail.com

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Purpose: Appropriate diuresis in congestive heart failure patients is important for overall outcome of the disease. The most frequent cause of hospitalizations is due to congestion, which can be alleviated by the use of diuretics if started at an appropriate time. Failure to do so can increase cost, length of stay, and morbidity. The primary objective of this study is to determine whether the first dose of diuretic was ordered and administered timely in the emergency department. The secondary objective is to assess the total urine output in the first twelve hours and its effects on cost and length of stay.

Methods: This Institutional Review Board approved retrospective chart review will be conducted using patients with the diagnosis of congestive heart failure from January 1, 2016 to July 31, 2016. Patients 18 years of age or older, male or female, and who have been given a diuretic within the first 24 hours of admission will be evaluated. The electronic medical record system will be used to collect the following data: patient age, gender, length of stay, home diuretic dose, past medical history, time of emergency department arrival, diuretic ordered, time ordered and administered, and time to diuresis. All data will be de-identified and remain confidential. Timing of when diuretic was ordered and administered, time to diuresis and amount of diuresis (in mL) will be assessed as final outcomes. Descriptive statistics will be used to analyze all data collected in this study.

Results: Pending

Conclusion: Pending

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-106

Poster Title: Review of pharmacological venous thromboembolism (VTE) prophylaxis in post-operative renal transplant patients

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Additional Author (s):
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Purpose: Venous thromboembolism is a potential complication of any surgical procedure, and new kidney transplant recipients are at a moderate risk for developing a clot after surgery. The objective of this study is to determine the rate of adherence to our hospital venous thromboembolism prophylaxis protocol in post-operative kidney transplant patients and determine the rate of venous thromboembolism within 3 months of the surgery.

Methods: This retrospective study was approved by the Institutional Review Board at Saint Barnabas Medical Center. Adult patients who have received a living or cadaveric kidney from October 1, 2015 to March 31, 2016 will be identified, and their post-operative course will be reviewed in our electronic medical record. The following data will be collected: age, sex, height, weight, serum creatinine, venous thromboembolism risk per screening protocol, modality of prophylaxis, prescribed anticoagulant, and time to its initiation. Additional data include documentation of venous thromboembolism or bleeding event, readmission rate due to these events, and requirement of therapeutic anticoagulation. The primary outcome is the adherence to the hospital venous thromboembolism event prophylaxis protocol in patients who have received a kidney transplant. Secondary outcomes will be to identify the incidence of thromboembolic and bleeding events within 3 months of kidney transplant. Patients with a prior history of venous thromboembolism or indication for chronic anticoagulant or antiplatelet use will be excluded. Data will be analyzed using descriptive statistics to quantify protocol compliance and venous thromboembolism and bleeding rates. Results of the study will be used as a quality assurance measure as well as to enhance future staff education.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-107

Poster Title: Integration of pharmacists into a code blue team: An educational program

Primary Author: Xiao Ma, Saint Peter's University Hospital, NJ; **Email:** xma@saintpetersuh.com

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Purpose: The involvement of a pharmacist in Code Blue teams has been shown to improve survival, reduce medication errors, and enhance compliance to the Advanced Cardiac Life Support (ACLS) algorithms. At Saint Peter's University Hospital (SPUH), a site-specific Code Blue training program was developed to facilitate the integration of pharmacists into the team. The purpose of this study is to assess the effectiveness of the Code Blue training program by evaluating the pharmacists' competency and readiness to participate in Code Blue response.

Methods: This study is a prospective evaluation of 10-20 SPUH pharmacists participating in a training program designed by pharmacists with ACLS certification. Pharmacists will be included in the study if they are able to provide written informed consent.The training consists of a three to four hour didactic training session, and a 90-minute interactive session that includes hands-on training in medication preparation. Prior to training, participants will be given a twenty-item competency exam. Upon completion of the training, the following will be assessed: improvement in pharmacists' competency via an exam identical to the pre-test, and a four-item post-training survey assessing readiness to participate in codes. Finally, two follow-up competency exams will be provided in person to participants at 7 and 30 days after training to assess continued competency. The study will take place between October 2016 andNovember 2016.The Student t-test, Mann Whitney U test, McNemar's test, and Fisher's Exactor Chi-Squared test will be used to analyze the results, as appropriate. The methodology of this study was submitted to the Institutional Review Board for expedited review.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 8-108

Poster Title: Establishment of an interdisciplinary glycemic stewardship committee at a community hospital

Primary Author: Diana Solomon, Shore Medical Center, NJ; **Email:** dsolomon@shoremedicalcenter.org

Additional Author (s):
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Purpose: Hospitalized patients with frequent hyperglycemia and hypoglycemia are at an increased risk for adverse outcomes, including death. Additionally, patients with diabetes are more likely to be hospitalized and have longer lengths of stay. Appropriate glycemic control in the hospital is essential to promote medication safety, minimize costs, and improve patient outcomes. This project was designed to develop a glycemic control stewardship committee, and report its impact on a community hospital's glycemic management.

Methods: The institutional review board determined that this study did not require their approval. Baseline institutional glycemic control was analyzed through retrospective review of all patients who received insulin in the past month. After analysis of hyperglycemia and hypoglycemia rates it was determined that glycemic management in its entirety needed to be addressed. The baseline state of intuitional glycemic control was brought to the attention of the pharmacy and therapeutics committee. The formation of a sub-committee to address glycemic management in the hospital, deemed the glycemic control stewardship committee, was approved by the pharmacy and therapeutics committee. Investigators will move forward to assemble an interdisciplinary team and develop protocols to improve glycemic management throughout the hospital. Glycemic control will be measured at baseline and after protocol implementation by percent of glucose values within the therapeutic range. The primary endpoint of this study is a comparison of the percent of glucose values within the target therapeutic range at baseline versus after protocol implementation. Secondary outcomes will include mortality and length of stay.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-109

Poster Title: Vancomycin drug utilization evaluation: a review of a community hospital's therapeutic monitoring protocol

Primary Author: Tea Cadenovic, Shore Medical Center, NJ; **Email:** tcadenovic@shoremedicalcenter.org

Additional Author (s):

Purpose: The Infectious Disease Society of America (IDSA) recommends vancomycin as a first-line agent for methicillin-resistant Staphylococcus aureus (MRSA) coverage in complicated skin and skin structure infection (cSSSI), healthcare-associated pneumonia (HCAP) and osteomyelitis. Vancomycin is frequently ordered for the listed indications and all orders are automatically substituted to the pharmacy's dosing and monitoring protocol. The objective of this study is to retrospectively review the ability of the hospital's vancomycin protocol to achieve optimal therapeutic levels while minimizing adverse effects such as acute kidney injury.

Methods: The Institutional Review Board reviewed this project and determined that approval was not necessary. Data from the second quarter will be extracted anonymously from electronic health records. Patient demographics such as age, weight, co-morbidities, renal risk factors, baseline laboratory values and temperature will be collected. The therapeutic monitoring data will consist of culture results, administered doses, length of therapy, trough values, time spent in therapeutic range, and discontinuation rates. The safety monitoring will be assessed through reports of infusion related reactions, allergic reactions, and acute kidney injury. Acute kidney injury will be staged according to the Kidney Disease: Improving Global Outcomes (KDIGO) guideline. The primary endpoints evaluated will be percentage of patients obtaining a therapeutic concentration on the first and second trough and percentage of treatment duration spent in therapeutic range. Secondary outcomes will focus on appropriateness based on organism cultured and minimum inhibitory concentrations to vancomycin, dose adjustments required to reach trough, reasons for discontinuation, and patient outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-110

Poster Title: Assessment and implementation of a protocol for direct oral anticoagulant use in the outpatient management of thromboembolism in eligible low-risk patients

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Purpose: While outpatient management of deep vein thrombosis (DVT) has been the standard of care, patients with pulmonary embolism (PE) have historically been treated inpatient due to the possibility of rapid cardiovascular compromise. Recent trials have demonstrated outpatient PE management in low-risk patients is safe, effective and cost-saving. Therefore, some patients with venous thromboembolism (VTE) may be unnecessarily admitted. Our institution has developed criteria to discharge patients with VTE at low-risk for complications. The purpose of this study is to retrospectively identify the percentage of patients admitted for VTE who would have been eligible for outpatient management based on predefined criteria.

Methods: This study is a retrospective chart review conducted at St. Joseph's Regional Medical Center to evaluate VTE management in emergency department patients from mid-March to mid-September 2016. A report will be generated identifying patients ≥18 years of age with radiologic confirmed diagnosis of DVT or PE. PE patients without shock, BNP ≥ 90pg/mL, troponin-I ≥0.05 ng/mL, or sPESI score ≥1 will be considered eligible for outpatient management. DVT patients without proximal end of clot not visualized on ultrasound, phlegmasia, documented iliac component of DVT, or oxygen saturation < 93% on room air will be considered eligible for outpatient management. Additionally, having pre-specified risk factors for complications with direct oral anticoagulant therapy will exclude outpatient eligibility, including clinical evidence of active bleeding, pregnancy, CrCl < 30 mL/min, platelets < 50,000 cells/mm3, therapeutic on anticoagulation, malignancy with active treatment, severe liver impairment, surgery in last 2 weeks or neurosurgery in last 4 weeks, social factors prohibiting outpatient treatment or other significant comorbidities requiring hospitalization >24 hours. Data on all risk factors will be collected. The primary endpoint will be the percentage of admitted patients during this time period that would have been eligible for outpatient

management based on the developed criteria. Secondary outcomes will be potential cost avoidance and safety measures, including hospital acquired complications, significant bleeding, and fatalities.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-111

Poster Title: Prescriber perceptions on the use of oral anticoagulants in the treatment of venous thromboembolism and non-valvular atrial fibrillation

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Purpose: Initiation of direct oral anticoagulants (DOACs) compared to warfarin has been associated with a statistically significant decreased length of stay at our organization, as seen in a previous evaluation. As a result, a pharmacy-led protocol to identify and recommend DOACs for eligible patients was approved in April 2016 by the P and T committee. Successful implementation of the protocol requires understanding how prescribers choose oral anticoagulants (OACs) for their patients. Currently, the amount of published literature surveying prescriber opinions of DOACs is limited. The purpose of this study is to survey prescribers regarding their experiences and perceptions with OACs.

Methods: This study will be submitted to the Institutional Review Board for approval. An online survey will be distributed through e-mail to prescribers at our institution on the use of OACs for treatment of venous thromboembolism (VTE) and non-valvular atrial fibrillation (NVAF). The survey will consist of questions regarding demographic information (prescriber's credentials, practice area, and level of professional experience), frequency of ordering OACs, potential concerns for prescribing a DOAC over warfarin, types of DOAC-specific education completed, influence of patient's prescription coverage on choice of OAC, and awareness of DOAC-specific medication access programs. Prescribers who participate in the study will remain anonymous. Descriptive statistics will be used to analyze the responses.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-112

Poster Title: Evaluation of diabetes-related health outcomes in patients managed by the ambulatory care pharmacist

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Purpose: Diabetes is a chronic illness affecting millions of Americans and it is estimated that 33-49% of patients do not meet his/her target glycemic goal which results in increased health care costs and poor health outcomes . Recently, an ambulatory care pharmacist started performing clinical interventions on patients with type 2 diabetes mellitus (T2DM) at an adult medicine clinic associated with the institution. The objective of this retrospective study is to evaluate the impact of the ambulatory care pharmacist on hemoglobin A1c (HbA1c), the number and type of interventions made, and the number of diabetes-related hospitalizations and/or emergency department (ED) visits.

Methods: This study has been submitted to the Institutional Review Board for approval. It is a retrospective chart review conducted at a tertiary teaching hospital and an adult medicine clinic. A list of eligible patients will be identified through medical charts. Eligible patients include those who are 18 years of age or older, have been diagnosed with T2DM, and are managed by the ambulatory care pharmacist. The following data will be collected: patient age, gender, height, weight, past medical history, medications at initial visit, baseline HbA1c, serum creatinine, blood urea nitrogen, albumin to creatinine ratio, and fasting lipid panel, HbA1c 3 months after the pharmacist has initiated anti-diabetic pharmacologic therapy and/or resolved any medication access issues, a second HbA1c taken by the pharmacist, hospital admissions and ED visits, dose adjustments, appropriate drug therapy added, and inappropriate drug therapy discontinued by the pharmacist, basic diabetes teaching provided including disease state education, sick day management, hypoglycemia and hyperglycemia management, self-monitoring of blood glucose, and teaching and/or assessment of subcutaneous insulin injection technique, and labs obtained by the pharmacist including HbA1c, fasting lipid panels, and

comprehensive metabolic panels. All patient identifiers will be de-identified using a numerical coding system, stored in a password protected computer, and the coding system will be destroyed upon completion. The reviewers will use the data to analyze diabetes-related outcomes pre and post pharmacist management.

Results: Not applicable

Conclusion: Not applicable

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-113

Poster Title: Evaluation of drug therapy for Clostridium difficile infection in a tertiary health system

Primary Author: Xing Tan, St. Joseph's Regional Medical Center, NJ; **Email:** r_tanxingf@sjhmc.org

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Purpose: The Infectious Disease Society of America/Society of Hospital Epidemiologists of America (IDSA/SHEA) and the American College of Gastroenterology (ACG) guidelines currently recommend drug therapy for Clostridium difficile infection (CDI) in adults to be guided by the severity of disease. The objective of this study is to evaluate whether the therapy of CDI matches disease severity within a health system.

Methods: This study has been submitted to the Institutional Review Board for approval. A computerized report will identify patients between January 1, 2016 – July 31, 2016 with C. difficile by a positive glutamate dehydrogenase (GDH) antigen test, C. difficile toxin, and/or a positive PCR test. The following data will be collected from the CDI admission: patient age, gender, length of stay, use of antibiotics, chemotherapy, or other immunosuppressive therapy prior to onset of CDI, medications for CDI treatment, and concurrent medications used during the hospital stay (other antibiotics used for treatment of other bacterial infections, acid-reducing agents, probiotics, laxatives, antidiarrheal agents, bile acid sequestrants, chemotherapy, immunosuppressive agents). Data pertinent to staging of CDI severity and clinical resolution will also be collected from day of admission, day of diagnosis, day 7 of treatment, last day of treatment, and day of discharge, including: mean number of bowel movements per day, maximum temperature, maximum WBC, serum creatinine, albumin, serum lactate, and blood pressure. In addition, admission to ICU, use of vasopressors in the ICU, and presence of colitis on CT scan will be recorded. The data will be reviewed for appropriateness of drug therapy according to IDSA/SHEA and ACG for each patient. Clinical outcomes, prescribing practices of each level of health care professional, and potential predisposing factors for CDI will also be evaluated.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 8-114

Poster Title: Benefits of having a pharmacist-led medication reconciliation program for admitted patients in an emergency care setting

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Purpose: Through previous research at The Valley Hospital, it was found that medication reconciliation performed by a pharmacist in the emergency department, resulted in a total of 4,531 medication discrepancies among 1,600 patients over a four month period. This data showed potential cost savings of approximately $159,048 along with favorable patient outcomes. The purpose of this study is to evaluate the use of a standardized medication reconciliation process in order to optimize patient safety and circumvent medication related complications.

Methods: A teaching tool was created by the current emergency department pharmacist and was approved by the Quality and Patient Safety Clinical Support Services, as well as the pharmacy director and manager. The tool was created in collaboration with other pharmacists in order to gain consistency among colleagues when performing patient interviews. In addition, the tool summarized a step-wise approach to determine which patients presented with a time sensitive priority for medication reconciliation. This tool served as a training instrument for pharmacists in their medication reconciliation role. For two consecutive weeks, medication reconciliation was performed, by either one or two pharmacists, using the approved tool. From April 21, 2016 to May 2, 2016, excluding weekends, one medication reconciliation pharmacist was dedicated to the emergency department for an 8-hour shift. The following week, May 4, 2016 to May 13, 2016, excluding weekends, two medication reconciliation pharmacists were dedicated to the emergency department for a total of 15 hours.

Results: During the week of April 21, 2016 to May 2, 2016, 59 percent of admissions came through the emergency department. Of the 59 percent, 45 percent of patients received

medication reconciliation from the emergency department pharmacist. During the following week, May 4, 2016 to May 13, 2016, 55 percent of admissions came through the emergency department. Of the 55 percent, 70 percent of patients received medication reconciliation from one of the emergency department pharmacists. Furthermore, by expanding the medication reconciliation hours, the percentage of medication reconciliations performed for emergency department admissions, increased by 11 percent.

Conclusion: With the start of the medication reconciliation program, only three full-time pharmacists (5 percent) were trained in the process of medication reconciliation. As of now, seventeen (29 percent) of pharmacists employed at The Valley Hospital are thoroughly trained in conducting medication reconciliation. The goal is for all pharmacists to be properly trained in medication reconciliation and to expand the program hours into a seven day operation.

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 8-115

Poster Title: Post-discharge pain level in patients undergoing total knee replacement (TKR), based on choice of local/regional pain control

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Additional Author (s):
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Purpose: The duration of stay for patients who receive a unilateral total knee replacement is variable. One of the factors that determine length of stay is a patient's functional status which is measured by the distance the patient can walk after surgery. Optimal pain control plays a major role in patient recovery and quality of life. The objective of this study is to determine the impact, if any, of the choice of local/regional pain management agents on inpatient narcotic usage, functional status, as well as post-discharge pain scores.

Methods: The Investigational Review Board approved this single center, retrospective chart review. Adult patients who received a unilateral total knee replacement from April 18, 2016 to July 18, 2016 at University Medical Center of Princeton at Plainsboro and were discharged to home after hospital stay were included in this study. Patients who received a bilateral or partial knee replacement were excluded. The standard multimodal pain control regimen included a long acting narcotic with as needed doses immediate-release narcotics for breakthrough pain, around the clock acetaminophen, and ketorolac as needed. The patients that are eligible to be included in the study were split into 2 groups that compared the standard post-operative pain control to the standard plus a continuous infusion of ropivacaine into the adductor canal. Physical therapists work with the patients after surgery to get the patients home or to a rehabilitation facility more quickly. Type of anesthesia, time in surgery/post anesthesia recovery, length of stay, narcotic usage, other pain medication use, distance walked after surgery, and pain scores was retrospectively evaluated for patients in both categories. The t-

test and chi-square will be used to detect any significant differences in pain scores and narcotic usage per hour between the two groups.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-116

Poster Title: Evaluating current practice of using local sensitivities to determine the treatment option for patients without risk of healthcare-associated infection

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Purpose: The Infectious Disease Society of America (IDSA) guidelines for acute uncomplicated cystitis and pyelonephritis recommend that patients should receive treatment based on local sensitivities. There is no known community antibiogram available for central New Jersey. Institutions may utilize the results of emergency department antibiogram to determine the treatment options for patients coming from community. However, studies have shown that many patients coming into the emergency department have risk factors for healthcare-associated infections. The purpose of this study is to assess the rationale for empiric treatment based on current practice through surveillance data.

Methods: The Department of Pharmacy at the University Medical Center of Princeton in Plainsboro approved this observational study. Individuals enlisted in the American Society of Healthsystem Pharmacists (ASHP) new practitioner form will be sent a survey via email. The survey will ask questions related to their institution's use of an antibiogram. Questions will ask individuals how frequently does their institution update their antibiogram, if they only include isolates obtained from hospital setting, if they have separate antibiograms for clinic and/or emergency room, if they have a separate community antibiogram, and whether or not they feel there is benefit in having an antibiogram for individuals without healthcare associated infection. Individuals will answer the survey anonymously. Descriptive analysis will be used to summarize the results.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-117

Poster Title: Dexmedetomidine versus propofol or benzodiazepines in mechanically ventilated adult patients in the intensive care unit

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Additional Author (s):
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Purpose: Dexmedetomidine has been shown in randomized controlled trials as an effective sedative in mechanically ventilated patients when compared to propofol or midazolam. It is one of the recommended sedatives in the 2013 Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium to improve clinical outcomes. Recently, dexmedetomidine has been approved at Virtua Health in addition to propofol and benzodiazepines as standard sedatives used for mechanically ventilated patients in intensive care unit (ICU). The purpose of this study is to investigate how dexmedetomidine will affect clinical and safety outcomes in mechanically ventilated adult ICU patients at Virtua Health.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be performed on adult ICU patients who required mechanical ventilation and had received at least once dose of dexmedetomidine. ICU length of stay, days on mechanical ventilation, incidence of breakthrough agitation, and pertinent safety data will be assessed. Clinical outcomes will be compared to a historical control group of matching criteria who received either propofol or benzodiazepines. All medical charts will be obtained from Virtua's medical record system, with data collection period covering at least 3 months in order to achieve 25 patients within each cohort. For the purpose of maintaining confidentiality, all patient identifying information will not be included in this study.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-118

Poster Title: Impact of in-patient pharmacist directed management of anticoagulation bridging from parenteral to oral therapy

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Purpose: Despite its wide use, anticoagulants are still considered one of the most common drug classes involved in medication errors. Recommendations for safe practices require multiple elements of performance, including utilization and evaluation of approved protocols for the management of anticoagulation. Studies have shown an overall improvement in quality of care with the involvement of a pharmacist. Virtua Memorial Hospital will implement a pharmacist directed practice to provide drug and dose recommendations to prescribers. The objective is to evaluate the provision of pharmacist recommendations for appropriate bridging on length of stay and time to therapeutic international normalized ratio (INR).

Methods: Adult patients, admitted to Virtua Memorial Hospital, who were initiated on therapeutic enoxaparin or heparin infusion with the intent of bridging to warfarin will be included in this study. Patients will also be evaluated to determine if they are candidates for the novel oral anticoagulants (NOAC). Prescribers will then be notified to determine if a NOAC agent is preferred over warfarin. This study will include both newly indicated patients and patients who are restarted due to an interruption of therapy. Time to first therapeutic INR, length of stay, whether or not recommendation was accepted and safety data will be collected and assessed. The first fifty patients who meet requirement will be evaluated daily, Monday through Friday. Data collected from these patients will be deemed the intervention group. Retrospective chart review will be performed for the most recent fifty patients prior to implementation, of pharmacist directed management, to establish the control group data. The data collected prior to implementation will be compared to the data extracted following implementation using the Pearson's Chi-Square test with an a priori significance level of 0.05. This study will be submitted for approval from the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-119

Poster Title: Outcomes and cost analysis of poractant alfa versus calfactant treatment in neonates with respiratory distress syndrome

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Purpose: Respiratory distress syndrome in neonates is generally caused by surfactant deficiency. Surfactant deficiency can lead to poor lung expansion, inadequate gas exchange, and a gradual collapse of the lungs. Poractant alfa and calfactant are surfactants that help compensate for this deficiency in neonates with respiratory distress syndrome and restore surface activity to the lungs. The objective of this study is to assess the safety, effectiveness, and cost of poractant alfa when compared to calfactant in neonates with respiratory distress syndrome.

Methods: This is an observational, retrospective chart review conducted at a community hospital that will be submitted to the Institutional Review Board for approval. Previously, calfactant was the formulary surfactant used at the hospital, but poractant alfa has now been added to the formulary. Data will be collected through an electronic medical record system post-discharge for all neonates who received calfactant for six months prior to the conversion to poractant alfa and those that received poractant alfa for six months after the conversion. The following outcomes will be statistically evaluated and compared: patient demographics (gestational age, postnatal age, weight, comorbid conditions), cost (direct drug cost, ventilator hours, cost of hospital stay), redosing rates, ventilator hours, total days on respiratory support, length of hospital stay, accurate dose and frequency, use of appropriate vial sizes based on dose rounding, endotracheal tube obstruction, bradycardia, oxygen desaturation, and overall survival at fourteen days. There will be no risk to patients because the research does not involve direct patient contact and data will be collected retrospectively after the patient is discharged. All data collected will be stored in a secure pharmacy folder accessible only by the study investigators in order to protect health information and minimize improper disclosure.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-120

Poster Title: Preventing admissions to intensive care unit due to delirium tremens

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Purpose: Delirium tremens (DT) are a severe complication of alcohol withdrawal that can increase both length of stay in an intensive care unit (ICU) and overall morbidity and mortality. Early identification and rapid treatment is vital to stabilizing the patient and reducing the risk of mortality. Our aim is to evaluate the effectiveness of a newly implemented DT protocol at a 660 bed community teaching hospital for use by rapid response teams. By allowing rapid response to treat DTs we can provide timely medication management, thereby curbing the progression of both the withdrawal syndrome and the patient's transfer to the ICU.

Methods: This study has been submitted to the Institutional Review Board for approval. Patients will be included if they are considered to be at risk of DTs based upon a Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised (CIWA-Ar) monitoring score of 20 or higher during admission. Patients will be excluded if they present to the emergency trauma center (ETC) with active alcohol withdrawal DTs present. In our institution, patients determined to have alcohol withdrawal and have two or more consecutive CIWA-Ar scores of 20 or higher will result in a rapid response code call. Upon the team's arrival, the DT protocol will be followed while patient's vital signs are monitored continuously. Our DT protocol utilizes evidence from previous trials establishing benzodiazepines as the first-line therapy for alcohol withdrawal and delivers high dose lorazepam intravenous (IV) pushes at a high frequency over a short duration. Prospective evaluation following protocol implementation will be compared to retrospective data prior to implementation to establish differences in the following endpoints: the number of transfers to the ICU, number of patients converted to lorazepam IV continuous infusions, and number of ICU related complications or deaths.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-121

Poster Title: Primary care pharmacy: a novel pharmacy model

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Purpose: A novel pharmacy model will be implemented, embedding a clinical pharmacist in a primary care practice, including acute care for patients while in the hospital and during all transitions of care. This model will incorporate the pharmacist throughout the complete continuity of care rather than operating in separate clinical silos. This novel model is expected to result in improved outcomes while minimizing costs. The objective of this pilot program is to assess the impact of a primary care pharmacist on hospital readmission rates, among other quality measures.

Methods: This ten-week pilot will embed a pharmacist as a member of the primary care team following patients in the primary care office, within the hospital, and across all transitions. The pharmacist will follow the same patients within all settings rather than seeing a multitude of varying patients. Within the primary care office, the pharmacist will be an accessible drug information resource for the practitioners and patients, improve patient access to medications and implement several strategies focused on improving quality outcomes. In the acute care setting, the pharmacist will focus on minimizing cost to the health system, reducing length of stay, and improving patient outcomes via several clinical strategies including antimicrobial stewardship, anticoagulation stewardship, and increasing core measure compliance. Within the transition phases, the pharmacist will function both as a clinician and as a care navigator by working closely with an interdisciplinary team to help fill any gaps in care. The primary outcome will be thirty day hospital readmission rate. The major secondary endpoints may include core measure compliance, the length of hospital stay, the cost of care, and physician satisfaction. The other endpoints include the number of drug information questions answered, and various safety endpoints, including avoided adverse events.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-122

Poster Title: Effect of implementing a proton pump inhibitor restriction at a community teaching hospital

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Purpose: Proton pump inhibitors (PPIs) suppress gastric acid production by irreversibly binding to H+/K+ ATPases on parietal cells, thereby inhibiting acid secretion by proton pumps. Indications for PPI use include gastroesophageal reflux disease, nonsteroidal anti-inflammatory-induced gastropathy, peptic ulcer disease and stress ulcer prophylaxis. Long-term use of PPIs has been associated with increased risk of hip fracture, pneumonia, and Clostridium difficile infection. The purpose of this study is to evaluate the impact of a PPI restriction on utilization at a community teaching hospital.

Methods: Following investigational review board approval, all patients on general medicine and medical-surgical units who received a PPI for two or more days will be included in this study. Data will be collected one month prior to restriction implementation via retrospective chart review. Once the PPI restriction is in place, data will be collected prospectively for a period of one month. PPIs will be restricted to patients who are being treated for an upper gastrointestinal bleed, Helicobacter pylori infection, peptic ulcer disease, erosive esophagitis as well as those who have gastroesophageal reflux disease or Zollinger-Ellison syndrome. Additionally, PPIs may also be utilized for stress ulcer prophylaxis in patients who meet restriction criteria. A PPI order set will be created containing these indications, which will serve as a guide for appropriate PPI utilization through forced indication selection. The order set will also aide the pharmacist in determining appropriateness based on indication. A pharmacist will then prospectively review orders for appropriateness of indication as well as restriction adherence and make interventions as necessary. The primary endpoint of this study will be to evaluate the effect of implementing a PPI restriction on the rate of inappropriate PPI prescribing at a community teaching hospital.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-123

Poster Title: A retrospective evaluation of ordering and administration practices of vasopressin in the medical intensive care unit

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Purpose: After being rebranded in 2014, the acquisition cost of vasopressin (Vasostrict®) increased by approximately 10-fold. In addition, the reformulated product has a shorter compounded stability which results in the need to replace stock more frequently. These two factors have led to the need to reassess our utilization of vasopressin. In August 2016, the Department of Pharmacy spent approximately $41,000 on vasopressin, which is an increase in expenditure when compared with historical spending patterns. The objective of this project, therefore, is to evaluate current vasopressin administration practices in the medical intensive care unit (MICU) at an academic medical center.

Methods: This study will include four weeks of retrospective data. This data will be isolated through use of a Crimson drug and indication specific report, and will be collected for patients identified as having an ICD-9 coded diagnosis of “sepsis,” “severe sepsis,” or “septic shock” receiving vasopressin in the MICU. We will evaluate how often vasopressin was ordered and compounded by pharmacy, but then subsequently wasted. The number of vasopressin doses wasted will include those which are not administered within the expiration time or discontinued prior to administration. The findings from this study will be used to identify opportunities for education on appropriate vasopressin prescribing and administration practices, which in turn, will potentially lead to decreased waste and cost savings.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-124

Poster Title: Evaluation of a pharmacist-run outpatient anticoagulation management service in durable mechanical support devices

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Purpose: Outpatient anticoagulation and/or antiplatelet therapy are central components of management for left ventricular assist device (LVAD) patients but must be carefully balanced with a high bleeding risk. Allegheny General Hospital pharmacist- run Anticoagulation Service has been managing outpatient anticoagulation in LVAD patients since March 2010 through telephone or face-to-face encounters. In 2012, publications showing an increase in pump thrombosis in HeartMate II® devices led to a shift in implant paradigms and anticoagulation practices at Allegheny General Hospital. This study is aimed to show the efficacy of the pharmacist-run Anticoagulation Clinic in managing LVAD patients with growing patient population and complexity.

Methods: The study was approved as an IRB exempt review. A retrospective chart review was performed on patients enrolled in the anticoagulation clinic during a twenty four-month period. The electronic health record was used to identify patients with a LVAD and at least two documented international normalized ratios (INRs). Results gathered were compared to an internal audit of the clinic performance that took place in 2010 in this patient population. Endpoints assessed included calculation of time in therapeutic range based upon patients' INR goal and individual INRs during the time period. Clinical outcomes were evaluated through collection of bleeding and thrombotic events, death during the time period, and frequency of INR evaluations.

Results: Not applicable.

Conclusion: Not applicable

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-125

Poster Title: HMG-CoA Reductase Inhibitors in Patients after Heart Transplantation

Primary Author: Kelsey Moss, Allegheny General HOspital, PA; **Email:** kelsey.moss@ahn.org

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Purpose: HMG-CoA reductase inhibitors (statins) are recommended for patients after heart transplant; however the current prescribing practices for patients being managed at a tertiary care facility are unclear. Describing the percentage of patients on statin therapy and meeting low density lipoprotein (LDL) goal levels, and uncovering the barriers to statin maintenance can assist in understanding these practices. These data are crucial in determining whether a change in clinic practice is warranted to ensure continuity of patient care.

Methods: This retrospective observational study will be submitted to the Institutional Review Board for approval as quality improvement/quality assurance and is designed to describe the current prescribing practices for statin therapy in heart transplant patients at a tertiary care facility. Electronic medical record documentation will be reviewed for patients listed in the active heart transplant patient database aged 18 – 89 years who had undergone a heart transplant from 01/01/2011 to 06/01/2016. Patients will be grouped based on whether their medication list currently includes a statin medication. For all patients, baseline characteristics and pertinent donor characteristics will be collected. For patients on statin therapy, LDL level, name and dose of statin, and coronary allograft vasculopathy (CAV) will be collected. If applicable, reason for not reaching LDL goal will also be collected. For patients not on statin therapy, preclusions to statin therapy and CAV will be collected. The primary endpoint is the percentage of heart transplant patients on statin therapy. The percentage of these patients who also meet target LDL levels, the barriers to achieving target LDL levels, preclusions to statin therapy, and the percentage of patients with diagnosed CAV in statin-treated compared to non-statin treated patients will also be analyzed. Quantitative and qualitative results will be reported using descriptive statistics and chi-square tests where appropriate.

Results: Data collection is currently ongoing.

Conclusion: N/A - Research in progress.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-126

Poster Title: Impact of frequency of tele-monitoring interactions on time in therapeutic range for patients on warfarin performing self-testing of international normalized ratios (INRs).

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Purpose: Monitoring warfarin therapy by means of patient self-testing (PST) utilizing frequent (up to weekly) fingerstick INRs at home has become an alternative to traditional INR testing methods. However, PST increases the volume of follow-up tele-monitoring interactions by clinicians compared to (up to monthly) interactions with traditional testing methods. To better allocate clinician resources, less frequent tele-monitoring interactions for PST was implemented. The objective of this quality assurance study is to determine the impact on time in therapeutic range (TTR) for patients using PST when follow-up phone calls are not provided for every therapeutic INR.

Methods: This study will be submitted to the Institutional Review Board for exempt review. Patient electronic medical records will be retrospectively reviewed for the pre- and post-study periods. Pre-study period is defined as June 1, 2016 to August 31, 2016 when patients using PST received a follow-up phone call for every INR result. Post-study period is defined as October 1, 2016 to December 31, 2016 when patients received a follow-up phone call at least monthly or when their INR is out of therapeutic range. The primary outcome will be average TTR during the pre- and post-study periods. Secondary outcomes will include individual TTR, number of bleeding and thrombotic events, and number of non-adherence and non-reporting events. Other patient variables that will be collected include age, sex, warfarin indication, INR goal, INR results, length of warfarin therapy, number of INR results and number of clinician interactions per month. All data will be recorded without patient identifiers and maintain confidentiality. No intervention will occur to patients as part of the data collection. Electronic health records from the Outpatient Anticoagulation Clinic at Allegheny General Hospital will be used to collect patient data. All PST patients managed by the clinic from May through December 2016 will be

included in the study. Major exclusion criteria will include patients with a ventricular assist device and those considered vulnerable for research.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-127

Poster Title: Evaluation of UFH nomogram for safety and user compliance

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Additional Author (s):
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Purpose: Intravenous unfractionated heparin (UFH) is commonly prescribed for the prevention and treatment of thromboembolic disorders and is monitored by the activated partial thromboplastin time (aPTT). The Joint Commission requires institution-approved protocols for dosing and laboratory monitoring due to the high risk nature of UFH. In our institution, therapeutic ranges for UFH monitoring via aPTT have recently changed due to use of a new reagent. Additionally, a new Electronic Health Record (EHR) was implemented, creating operational changes for all users. The purpose of this project is to evaluate the compliance with and safety of these nomograms given these updates.

Methods: This project was approved by the institution's IRB as a Quality Improvement initiative. A retrospective chart review was conducted on patients receiving an intravenous UFH infusion from May 1, 2016 – June 30, 2016. The first 72 hours of UFH therapy was evaluated. Patients were excluded from the analysis if they met any of the following criteria: age less than 18 years, UFH discontinued prior to therapeutic aPTT, change of nomogram during therapy, UFH initiated at an outside hospital, use of a physician defined nomogram, use of an anti- Xa level nomogram, patients on extracorporeal membrane oxygenation, pregnancy, and incarcerated patients. Safety was assessed by measuring the following: proportion of patients with subtherapeutic, therapeutic, or supratherapeutic initial aPTT's; time to first and second therapeutic aPTT values; time to two consecutive aPTT values; and number of adjustments prior to attaining first therapeutic aPTT. Compliance was evaluated by determining user adherence to the nomogram regarding timing of aPTT monitoring; utilization of dose titrations,

bolus dosing, and dosing holds; and utilization of the UFH order sets in the EHR. Data were evaluated utilizing descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-128

Poster Title: Transitions of care: assessment of antiretroviral medication errors in an academic medical center

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Purpose: Medication errors involving HIV-infected patients treated with antiretroviral therapy (ART) are frequent during transitions of care (TOC) including hospital admission and discharge. Consequences of omitting or altering ART may include antiretroviral resistance, toxicities, treatment failure, and increased cost. To reduce drug waste, our institution removed combination antiretroviral products from the inpatient formulary and built combination antiretroviral linked orders (from single-entity products) in the computerized prescriber order entry (CPOE) system. The primary objective was to assess the frequency of medication errors related to ART on admission. The secondary objective was to determine the percentage of patients discharged on appropriate ART.

Methods: Exempt review was granted by the Institutional Review Board for this quality improvement project. A computerized report was generated in the CPOE system for patients prescribed commercially available ART between March 1, 2016 and September 30, 2016. Inclusion criteria: age 18 years and older, HIV-infection, and taking ART as an outpatient. Exclusion criteria: new ART started during the current admission, acute kidney injury or fluctuating renal function necessitating dose adjustment during admission. A retrospective chart review of the electronic medical record will be conducted. Data collected will include: age, sex, ethnicity, outpatient ART, inpatient ART, whether the ART was a co-formulated product, modified ART during admission as applicable and discharged ART regimen. Confidentiality will be maintained and no patient identifiers will be collected. Outcome measures include inpatient

and outpatient TOC prescribing errors tabulated as wrong medication, wrong frequency, wrong dose, omission, or ART regimen not reordered.

Results: From March 1 to September, 30, 2016, 46 patients were ordered ART. Of 136 orders, 50(36.8%) were combination ART and 86(63.2%) were single-entity ART. Data collection is ongoing and data analysis will be conducted when data collection is complete.

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-129

Poster Title: Retrospective analysis of treatment practices for managing coagulopathies in critically ill patients with cirrhosis

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Sarah Young

Purpose: Critically ill patients with cirrhosis often present with coagulopathies. There is debate about whether an elevated international normalized ratio (INR) in the setting of liver impairment demonstrates a hypocoagulable state or a rebalanced coagulation equilibrium. Currently, there is a lack of quality studies evaluating the utilization of vitamin K or fresh frozen plasma (FFP) to prevent bleeding in cirrhotic patients with coagulopathies. This study aims to characterize the current practice of managing coagulopathies in critically ill patients with cirrhosis in the absence of bleeding.

Methods: This is a single-center retrospective cohort study. Patients residing in the medical intensive care unit with cirrhosis and a coagulopathy will be included in the study. Coagulopathy is defined as an INR of 1.5 or greater on at least one day. Patients with bleeding on admission or those who received treatment dose anticoagulation will be excluded. The primary objective is to determine the percentage of the study population that received vitamin K, FFP, both, or neither. Multiple secondary objectives will also be evaluated, which include characterizing the prescribing practice of vitamin K and FFP, evaluating the efficacy of vitamin K and FFP in correcting coagulopathies, and evaluating the safety of receiving treatment. The prescribing practice will be characterized by evaluating the dose given and administration route, the median total number of administrations, the median total amount of therapy received, and the percentage of product administrations that were given prior to a procedure. Efficacy will be assessed by the median INR after product administration and the percentage of major bleeding events in patients who received treatment. Safety will be assessed by the

percentage of thrombosis, transfusion-related acute lung injury, and anaphylaxis in patients who received treatment.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-130

Poster Title: Direct-acting oral anticoagulants (DOACs) versus low-molecular weight heparin (LMWH) for the prevention of venous thromboembolism (VTE) recurrence in patients with malignancy

Primary Author: Jennifer Zhao, Conemaugh Memorial Medical Center, PA; **Email:** jzhao@conemaugh.org

Additional Author (s):
Sierra Roberts

Purpose: The current standard of care for venous thromboembolism (VTE) prophylaxis and treatment in cancer patients is low molecular weight heparin (LMWH). Direct-acting oral anticoagulants (DOACs) are new options that may address limitations of LMWH such as injection pain, inconvenience, and cost. Currently, there are no head-to-head studies comparing the two. This is a retrospective cohort study that will analyze the efficacy and safety of DOACs compared to LMWH in cancer patients for the prevention of symptomatic recurrent VTE.

Methods: This study was submitted to the Institutional Review Board for approval. The health system's billing records will be used to identify patients with International Classification of Disease (ICD)-10 codes in the past 3 years for both venous thromboembolism (deep vein thrombosis or pulmonary embolism) and any type of solid or hematologic malignancies. Electronic medical records will be used to review each patient and collect data including treatment regimen, indication, start date, duration, cancer diagnosis, diagnosis date, metastatic status, treatment status, venous thromboembolism history, and occurrence date. Patients who used thrombectomy, caval filter, fibrinolytic agents for treatment of venous thromboembolism, or used therapeutic doses of an anticoagulant other than low-molecular weight heparin or direct-acting oral anticoagulants are excluded. Primary objective is to determine the incidence rate of venous thromboembolism recurrence (efficacy) in cancer patients on prophylactic anticoagulation. Secondary objective is to determine the incidence rate of clinically significant bleeding (safety). Hypothesis is direct-acting oral anticoagulants will have equal or less incidence of recurrent venous thromboembolism and bleeding than low-molecular weight heparin in cancer patients. All data will be stored in secure, password protected Microsoft Excel documents. Only investigators involved with this study will have access to data.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-131

Poster Title: Outpatient clinic naloxone kit protocol

Primary Author: Annie Tien, Conemaugh Memorial Medical Center, PA; **Email:** atien1540@gmail.com

Additional Author (s):

Purpose: Naloxone is an opioid antagonist used as an antidote during an emergency situation to treat known or suspected acute opioid overdose manifested by central nervous system and/or respiratory depression. The goal of this study is to establish a protocol to appropriately identify outpatient clinic patients on opioids and provide them a naloxone kit. Each patient and/or caregiver will be counseled and must successfully demonstrate proper administration of a naloxone kit.

Methods: This is a prospective study of outpatients who are on opioids at the Family Medical Center, an outpatient clinic at Conemaugh Memorial Medical Center. Subjects less than eighteen years of age, pregnant women, patients who are incarcerated, or patients receiving opioids for an acute issue for less than a month will be excluded from the study. Recommendations for a naloxone kit will be made to physicians for patients on high doses of opioids equal to 100 milligrams or more of morphine equivalence per day, prescribed both opioids and benzodiazepines, or suspected of or known to have nonmedical use of opioids. Prescriptions for naloxone kits will be accompanied by standard counseling to the patients and/or caregivers on prevention, identification, and response to an opioid overdose.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-132

Poster Title: Hepatitis C virus surveillance: Implementing a screening initiative in a family medicine clinic

Primary Author: Rebecca Morcheid, Conemaugh Memorial Medical Center, PA; **Email:** rmorchei@conemaugh.org

Additional Author (s):
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Purpose: Hepatitis C Virus (HCV) affects approximately three million people in America and half of these infected patients are unaware. Due to the routes of transmission of the infection, patients with a history of intravenous drug use (IVDU), HIV, and patients born between the years of 1945 to 1965 are at an increased risk for contracting the infection. The objective of this study is to observe an increase in rate of patients screened for HCV in a family medicine clinic after implementation of a screening initiative which includes patient education and Pennsylvania state law requirements.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record will identify patients who have received an HCV screening or diagnostic test. The data collected for the purposes of this study will include: total number of patients who seek care in a family medicine clinic, patients who received an HCV screen, the high-risk category in which the patient was flagged for an HCV screen (IVDU, HIV, high-risk age range), results of the screen, if the infected patient received treatment, and if the infection was eradicated after completed medication therapy. Pharmacists and physicians will identify high-risk patients. The state of Pennsylvania will require a one-time offer of an HCV screen to patients born between the years of 1945 to 1965 beginning September 18th, 2016. The screening initiative will also include patient education delivered by healthcare providers and informational handouts. The primary outcome of this study will measure screening rates after the implementation of the screening initiative and compare them to previously reported screening rates. Secondary outcomes will measure the prevalence of positive screens in each high-risk category, the number of patients who received treatment, and the number of

infections that were successfully eradicated. After completion of data collection by the principal investigator and co-investigators, all patient identifiers will be erased.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-133

Poster Title: Pharmacy-driven discharge antibiotic counseling for patients on oral or intravenous antibiotic therapy for osteomyelitis, endocarditis, or bacteremia

Primary Author: Paige Coleman, Conemaugh Memorial Medical Center, PA; **Email:** pcoleman@conemaugh.org

Additional Author (s):
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Purpose: The Joint Commission released a new antimicrobial stewardship medication management standard for hospitals and nursing care centers that will go into effect on January 1, 2017. This new standard will include implementing new policies and practices to increase antibiotic education for patients and ensure proper use of antibiotics. The objective of this project is to create a protocol that will involve the completion of an antibiotic review for inpatients requiring long-term antibiotic therapy post-discharge, increase the patient's understanding of their post-discharge antibiotic regimen, and improve overall patient satisfaction.

Methods: This quality improvement project will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients with a diagnosis code of osteomyelitis, endocarditis, and/or bacteremia. The following data will be collected: diagnosis, prescribed antibiotic (including strength and frequency), and duration of antibiotic therapy. An antibiotic review will be done to ensure the patient is on appropriate therapy. Patients will then be counseled on their antibiotic(s) prior to discharge and will receive a follow-up phone call one-week post-discharge and again at the end of antibiotic treatment. During the first follow-up phone call, the pharmacist will assess adherence, tolerability to medication, and the patient's overall understanding of their antibiotic treatment. The second phone survey will be given at the end of treatment and will evaluate if the patient's comfort level with their antibiotic regimen increased after counseling, if their overall care was improved due to the antibiotic counseling, and if it impacted their adherence to their medication therapy. The patient will also be asked if they missed any treatment doses and this will be recorded. All collected data will be de-identified after the completion of the project.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-134

Poster Title: Transitions to Discharge: Evaluation of Pharmacist-Involvement in Discharge Planning

Primary Author: Kimberly Grant, Duquesne University Mylan School of Pharmacy/St. Barnabas, PA; **Email:** grantk@duq.edu

Additional Author (s):
Christine O'Neil

Purpose: Pharmacist involvement in the skilled nursing facility (SNF) has historically been limited to chart review. Today, shorter hospital length of stay and more acute patients contribute to the many challenges skilled nursing facilities face. The objective of this study is to investigate the effect of a pharmacist-run transitions of care model in a skilled nursing facility with a focus on discharge preparation. Primary outcomes will include re-hospitalization, emergency department visits, and readmission to SNF within 30 days of discharge.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients admitted for skilled nursing stays beginning July 1, 2016 will be included. Admissions relating to respite stay, hospice care or long term care will be excluded. Sample size is projected to be 50-100 patients. These patients will be reviewed by a clinical pharmacist upon admission, three times weekly and on the day prior to discharge to ensure any medication-related problems are addressed prior to discharge home. Interventions will be documented as either relating to indication, adherence, effectiveness or safety. In addition, high risk diagnoses of acute pain, diabetes and congestive heart failure will prompt additional monitoring as outlined in the study protocol. Both descriptive data and outcomes data will be collected from this group and a comparator group at another skilled nursing facility within the health system.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-135

Poster Title: Economic impact of patient centered pharmacy services in long term care.

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Additional Author (s):
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Purpose: The purpose of this study is to evaluate pharmacy services provided, specifically looking at types of recommendations, acceptance rates, and outcomes of recommendations made for medication related problems, in order to identify the clinical and economic impact of patient-centered pharmacy services in a skilled nursing facility.

Methods: Retrospective data will be collected at St. Barnabas's Skilled Nursing Facility through an electronic charting system based on past pharmacy recommendations to improve and resolve medication related problems from June 2015 to June 2016. Data collected will include patient demographics, what the recommendation was, outcome of recommendation and the pharmacy service the recommendation was made through. Acceptance rate for each type of patient-centered pharmacy service provided, including medication reconciliation upon admission, anticoagulation monitoring, antibiotic monitoring, requested review, and falls, will be analyzed for clinical impact. Economic impact of pharmacy services at St. Barnabas will then be determined using cost-benefit analysis methodology.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-136

Poster Title: Analysis of increased 4-factor prothrombin complex concentrate waste at an academic medical center

Primary Author: Demi Lenox, Einstein Healthcare Network, PA; **Email:** dlenox@mail.usciences.edu

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Purpose: The FDA has only approved 4-Factor Prothrombin Complex Concentrate (Kcentra®) for acute major bleeding or urgent surgery in patients who are taking a vitamin K antagonist. Kcentra® is a costly medication and it has been speculated that in some cases doses are being ordered, but then subsequently not administered. Once prepared, the drug must be used within four hours or the dose is wasted. This six month retrospective chart review in an academic medical center aims to analyze the cost incurred by the wasting of this drug and to evaluate cases associated with discontinuation of 4-Factor Prothrombin Complex Concentrate.

Methods: A retrospective drug utilization review is being performed on 23 patients who had an order for 4-Factor Prothrombin Complex Concentrate within the past eight months. This is a single-center, hospital-based chart review where the variables of interest are physician and department placing the order, patient's home anticoagulation, indication for order, INR before and after 4-Factor Prothrombin Complex Concentrate administration, proportion of ordered doses that were subsequently administered, and reason for discontinuation of the order. Analysis of appropriateness of the dose ordered for the patient will also be conducted. Lastly, calculation of the cost of therapy, or in some cases, the cost of the therapy that was never given will be calculated in order to try to minimize wasting of 4-Factor Prothrombin Complex Concentrate.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-137

Poster Title: Assessment of the prescribing patterns for the management of carbapenem-resistant Enterobacteriaceae infections at an academic medical center

Primary Author: Rachel Lynch, Einstein Medical Center, PA; **Email:** lynchrac@einstein.edu

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Seung Ha

Purpose: Infections due to multi-drug resistant gram negative organisms are a growing issue within healthcare. In particular, carbapenem-resistant Enterobacteriaceae present clinicians with the challenge of determining antimicrobial regimens due to the lack of treatment guidelines. Treatment of these serious infections usually involves combination therapy with antimicrobials, including high-dose carbapenems, ceftazidime-avibactam, colistimethate sodium and other alternative agents. Many of these antimicrobials have limitations to therapy, including side effects, inadequate concentrations at the infection site, development of resistance, and lack of availability. This research will provide an analysis of prescribing patterns of clinicians at an academic medical center when treating these infections.

Methods: A retrospective chart review will be conducted to collect information on the prescribing patterns of clinicians when treating carbapenem-resistant Enterobacteriaceae infections. The site of infection, organism isolated, and antibiogram of the organism will be documented. Patient factors that could influence which regimen is selected will also be collected. These factors include baseline creatinine clearance, incidence of acute kidney injury, allergies, and their residence prior to admission or recent hospitalization. Antimicrobial agents, doses, frequency of administration, duration of treatment and rate of infusion will then be collected. We will evaluate if the regimens vary based on prescriber and if the antimicrobials are ordered appropriately. We will calculate the frequency of regimens selected and determine if there is a consistent prescribing pattern that is seen at this institution. We will also analyze if varying patient factors impacted the choice to order the selected regimen.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-138

Poster Title: Assessment of Prescribing and Monitoring Habits for Patients Taking an Antiarrhythmic and a Concomitant QTc-prolonging Antibiotic

Primary Author: Kelsey Noss, Einstein Medical Center, PA; **Email:** nosskels@einstein.edu

Additional Author (s):
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Purpose: The QTc interval on an electrocardiogram (EKG) represents depolarization and repolarization of cardiac ventricles. QTc-prolongation (>450 milliseconds in males, and >470 milliseconds in females) can predispose patients to life-threatening ventricular arrhythmias. QTc-prolongation occurs in 1-10% of patients taking QTc-prolonging antiarrhythmics, and < 1% of patients taking macrolide or fluoroquinolone antibiotics. The concomitant use of ≥2 QTc-prolonging medications increases this risk. However, it is unknown if EKGs alter prescribing and monitoring habits when these medications are combined. This project will observe prescribing and monitoring habits for patients taking an antiarrhythmic and a concomitant QTc-prolonging antibiotic at an academic medical center.

Methods: This retrospective chart review, determined to be exempt from IRB-approval, included patients admitted to an academic medical center from October 1, 2015 to September 30, 2016. Patients were identified based upon an electronic report identifying drug interaction alerts advising both prescribers and pharmacists of an increased risk of a QTc-prolonging effect. Patients taking either amiodarone or sotalol and had ciprofloxacin, moxifloxacin, or azithromycin added to their treatment regimen during admission were included. Data collection included patient age and gender, inpatient medical service, initial and additional QTc-prolonging agent, the presence or absence of baseline and follow-up EKGs, QTc interval measurement, pharmacist interventions, and physician therapy modifications. Descriptive statistics will be used to analyze patient demographics, prescribing, and monitoring data.

Results: Results in progress.

Conclusion: Conclusion in progress.

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-139

Poster Title: Monitoring and Management of Trastuzumab-Induced Cardiotoxicty at an Outpatient Cancer Center

Primary Author: Anupama Divakaruni, Geisinger Medical Center, PA; **Email:** a.divakaruni@gmail.com

Additional Author (s):
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Purpose: Trastuzumab is a monoclonal antibody that is indicated for treatment of HER2 positive adjuvant or metastatic breast cancer and gastric cancers. Cardiomyopathy is one of the many toxicities associated with trastuzumab. The prescribing information suggests monitoring the left ventricular ejection fraction (LVEF) at baseline and every three months during therapy. It also discusses the course of therapy when a decrease in LVEF occurs. The administration of many chemotherapy agents, including trastuzumab, occurs in an outpatient setting. While the monitoring and management of cardiotoxicity has been studied in clinical trials and institutional settings, the consistency in an outpatient setting is unknown.

Methods: In this retrospective cohort study, we seek to analyze the records of patients who initiated therapy with trastuzumab between January 1, 2014 and July 31, 2015 in the Geisinger Health System to better characterize the extent of cardiac monitoring and interruptions in therapy. The primary endpoints include the number of patients during this time period that were monitored and had interruptions in therapy as outlined in the package insert while taking trastuzumab. The secondary endpoints include the number of patients that discontinued therapy as a result of cardiac dysfunction, the number of patients that resumed therapy and the dose at resumption after recovery of cardiac function, the number of patients that reported symptoms of CHF, whether patients had an ECHO or MUGA scan to determine cardiac function, the number of patients that were started on cardio-protective medications, and the number of patients receiving trastuzumab for adjuvant versus metastatic breast cancer.

Results: Between January 1, 2014 to July 31, 2015, there were approximately 40 patients within the Geisinger Health System (GHS) that were treated with trastuzumab. Data collection is in progress.

Conclusion: Conclusions will be made after completion of data collection and analysis.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-140

Poster Title: Risk of hospital-acquired Clostridium difficile enterocolitis following treatment with cefepime or piperacillin/tazobactam: A retrospective chart review

Primary Author: Bradley Lauver, Geisinger Medical Center, PA; **Email:** belauver@geisinger.edu

Additional Author (s):
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Purpose: Clostridium difficile (C. diff) enterocolitis is associated with significant morbidity and mortality as well as direct and indirect costs of around $1 billion per year in the United States, according to the Centers for Disease Control and Prevention (CDC). C. diff enterocolitis is also a well-recognized risk of antibiotic use and both cefepime and piperacillin/tazobactam are frequently used broad-spectrum, empiric antibiotics. The objective of this study is to determine the relative risk of developing C. diff enterocolitis after a course of either cefepime or piperacillin/tazobactam.

Methods: The Institutional Review Board approved this retrospective chart review. The electronic health record system will identify hospitalized patients aged 18 and older who received two or more consecutive doses of cefepime and/or piperacillin/tazobactam. The following data will be collected: patient medical record number, age, gender, ethnicity, comorbidities (i.e. obesity, renal dysfunction, hepatic dysfunction, cardiac dysfunction, history of C. diff enterocolitis), prior to admission and inpatient medications, date of admission and discharge, date of birth and death (if applicable), and ICD9 and ICD10 diagnostic codes for C. diff enterocolitis. All electronic study data will be encrypted and stored confidentially. Relative risk of patients developing C. diff enterocolitis within eight weeks of receiving either cefepime or piperacillin/tazobactam will be calculated. Mortality during hospitalization, hospital length of stay, and readmission rates in patients who developed C. diff enterocolitis attributed to either antibiotic will also be reviewed.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-141

Poster Title: Utilization of four-factor prothrombin complex concentrate (PCC): A drug-use evaluation

Primary Author: Lauren Para, Geisinger Medical Center, PA; **Email:** lmpara@geisinger.edu

Additional Author (s):
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Purpose: Four-factor prothrombin complex concentrate (PCC, Kcentra) is approved in the health system's anticoagulation guidelines to be used for the reversal of warfarin and factor Xa inhibitors in patients with severe or life-threatening bleeding or an urgent surgery or procedure. However, it is often used for non-approved indications. With the high cost and increased risk of thromboembolic complications associated with its use, it is essential to optimize the utilization of four-factor PCC and reserve for patients in which the benefits outweigh the risks. The objective of this evaluation is to determine whether four-factor PCC is used appropriately within the health system.

Methods: The electronic health record system will identify patients 18 years of age or older who were admitted to a hospital within the health system and had four-factor PCC ordered between March 1, 2016 and August 31, 2016. The following data will be collected: patient medical record number, weight, prior to admission anticoagulant, international normalized ratio (INR) prior to administration, indication for four-factor PCC use, dose, number of doses given, number of patients with recent thromboembolic events (within 3 months), dose and route of phytonadione if used, pharmacist interventions, attending provider and service that ordered four-factor PCC, and whether the appropriate order set was used. All data will be maintained confidentially and presented without patient identifiers.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-142

Poster Title: Medication usage evaluation of chemotherapy dose rounding at Geisinger Medical Center

Primary Author: Tristan Maiers, Geisinger Medical Center, PA; **Email:** tamaiers@geisinger.edu

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Purpose: Due to increasing patient volumes and decreasing reimbursement, hospitals are tasked with finding ways to meet the demands of its patients without increasing costs. Antineoplastic chemotherapy costs have risen significantly over the years and accounts for a large portion of a pharmacy budget. One approach to decrease costs and reduce waste includes dose rounding, a technique that reduces waste and cost without decreasing efficacy or increasing toxicities. The objective of this study is to quantify and evaluate the inventory and financial benefits of dose rounding by analyzing pharmacist interventions completed through the electronic medical record.

Methods: The electronic medical record system will identify oncology patients 18 years of age and older who have received single-dose vial intravenous chemotherapy at Geisinger Medical Center or Geisinger Wyoming Valley who got their chemotherapy dose rounded per protocol. Chemotherapy agents used for investigational purposes will be excluded from analysis. The following data will be analyzed from October 2014 through July 2016: order identification number, patient's medical record number, medication name, intervention classification, and intervention documentation. Intervention documentation includes pharmacist's name, time of intervention creation, original ordered chemotherapy dose, chemotherapy dose administered to patient, and facility where chemotherapy was administered. All data will be maintained confidentially. The reviewer will also appraise a subset of interventions to verify if the dose rounding policy was appropriately followed per protocol.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 8-143

Poster Title: Validating a standardized weight-based vancomycin dosing protocol in end stage renal disease patients on intermittent hemodialysis

Primary Author: Mandana Naderi, Geisinger Wyoming Valley Medical Center, PA; **Email:** mnaderi@geisinger.edu

Additional Author (s):
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Purpose: No guidelines currently exist for optimal vancomycin dosing and monitoring strategies in end-stage renal disease patients on intermittent hemodialysis. The purpose of this study is to validate a standardized weight-based vancomycin dosing protocol in hospitalized patients on intermittent hemodialysis.

Methods: This retrospective study will determine if a standardized weight-based vancomycin dosing protocol leads to consistent vancomycin trough levels between 15-25 mg/L. End stage renal disease patients were deemed eligible for this study if they were prescribed IV vancomycin and received intermittent hemodialysis 3 times/week during their hospitalization (e.g. Monday, Wednesday, December 7, Friday) from January 1, 2015 to December 31, 2016. All patients received a loading dose of 20 mg/kg, then a 10 mg/kg vancomycin dose after each of their hemodialysis sessions. A pre-dialysis vancomycin trough level was obtained after a loading dose was given but before their first hemodialysis session. If patients' first vancomycin level was therapeutic between 15-25 mg/L, then their level was checked only once a week during their hospitalization. If patients had a supratherapeutic initial trough level that was >25 mg/L, then more levels were obtained during the week as appropriate. The vancomycin dosing and monitoring data will be pulled from our electronic medical record system. Any data obtained will not include any patient identifiers and will be kept confidential. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 8-144

Poster Title: Effectiveness of a modified vancomycin dosing protocol developed for obese patients

Primary Author: Matthew Hadginske, Geisinger Wyoming Valley Medical Center, PA; **Email:** matthew.hadginske@wilkes.edu

Additional Author (s):
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Purpose: Intravenous vancomycin is indicated for the treatment of severe infections caused by susceptible gram-positive microorganisms. Significant adverse effects including nephrotoxicity and ototoxicity necessitate therapeutic monitoring of vancomycin levels. Dosing is initially based on a patient's actual body weight and renal function. However, current weight-based dosing recommendations may result in higher trough concentrations in obese patients compared with non-obese patients. The objective of this study is to compare the effectiveness of an original (15 mg/kg/dose) and a modified (10 mg/kg/dose) dosing protocol in attaining goal trough concentrations in the obese patient population, as well as to compare the incidence of nephrotoxicity.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients greater than or equal to 120 kg with a baseline serum creatinine less than or equal to 1.3 mg/dL, who have received two or more doses of vancomycin with at least one subsequent vancomycin trough. The following data will be collected: patient age, gender, height, weight, indication for vancomycin use, serum creatinine, BUN, vancomycin doses, vancomycin troughs, and concurrent nephrotoxic medications. Patients weighing greater than or equal to 120 kg and greater than or equal to 140 percent of their ideal body weight who received a 20-25 mg/kg (3 g maximum) loading dose of vancomycin will be included. Patients will be divided into two groups based upon the initial maintenance dose administered. The original protocol group will include patients who received maintenance doses of 15 mg/kg/dose, while the modified protocol group will include patients who received maintenance doses of 10 mg/kg/dose. All vancomycin dosing is based on the patient's actual body weight. Vancomycin trough concentrations of 15-20 mcg/mL will be

considered therapeutic. Trough concentrations less than 15 mcg/mL will be considered below goal, while troughs greater than 20 mcg/mL will be deemed above goal. Nephrotoxicity will be defined as an increase in serum creatinine greater than or equal to 0.3 mg/dL within 48 hours.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-145

Poster Title: Incidence of acute kidney injury among patients initiated on vancomycin and piperacillin/tazobactam versus vancomycin and cefepime

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Additional Author (s):
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Suraj Rajasimhan
Tiffany Bias

Purpose: Broad spectrum antibiotics are routinely initiated in hospitalized patients to provide empiric coverage of suspected pathogens. Clinicians often utilize vancomycin and beta-lactams for such regimens until susceptibilities are available. Recent literature has associated concomitant vancomycin and beta lactam antibiotics with nephrotoxicity, particularly, piperacillin/tazobactam. The objective of this study is to evaluate the incidence of acute kidney injury among patients receiving vancomycin and piperacillin/tazobactam versus vancomycin and cefepime combination therapies.

Methods: This study is a retrospective, observational, cohort analysis performed at Hahnemann University Hospital, a 496-bed teaching hospital in Philadelphia, Pennsylvania. Patients who received vancomycin with piperacillin/tazobactam or cefepime for at least 48 hours will be included in the study. Patients will be excluded if they had baseline chronic kidney disease or on any form of continuous renal replacement therapy. The following data will be collected: demographics, renal function, antibiotic dosages, total duration of combination therapy, number of concomitant nephrotoxic agents, and initial and maximum vancomycin trough levels. The primary outcome will be the incidence of acute kidney injury defined as an increase in serum creatinine by two times from baseline according to the Risk Injury Failure End Stage Renal Disease criteria and the Acute Kidney Injury Network criteria. Secondary outcomes will include total length of hospital stay and length of intensive care unit stay. All continuous data will be analyzed using the Student's t-test or Mann-Whitney U test and all categorical data will be analyzed using the Chi Squared test. Baseline characteristics will be analyzed using means and standard deviations. For all analyses, alpha will be set at 0.05.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-146

Poster Title: Efficacy and nephrotoxicity associated with colistin use in the treatment of multi-drug resistant (MDR) infections

Primary Author: Aiman Bandali, Hahnemann University Hospital, PA; **Email:** aiman.bandali@tenethealth.com

Additional Author (s):
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Purpose: In light of carbapenem resistance and limited antimicrobial armamentarium, colistimethate sodium has become a competing option for MDR infections. Its use has been precluded given the disparity that exists in reported rates of nephrotoxicity with intravenous administration between old and recent studies; older studies reporting rates upward of 65%, with more recent reporting 8-19%. These differences are attributed to pharmacokinetic data derived from prodrug rather than active metabolite studies. The objective of this study is to evaluate colistin associated nephrotoxicity according to a standardized definition of acute kidney injury (AKI) and assess clinical outcomes in patients with documented MDR infections.

Methods: This retrospective study will be conducted at Hahnemann University Hospital, a 496-bed tertiary hospital located in Philadelphia, PA, upon Institutional Review Board approval. Patients who have received at least 48 hours of colistin treatment with documented MDR infections will be included for further analysis. The following data will be collected: patient demographics; creatinine clearance, glomerular filtration rate (GFR); comorbidities; albumin; vital signs; colistin dose, frequency, and duration; concomitant nephrotoxins; and culture data. The primary outcome is the rate of AKI according to the Risk, Injury, Failure, Loss and End stage renal disease (RIFLE) criteria. Secondary endpoints include clinical cure, infection related mortality, 30 day mortality, and length of stay. A univariate analysis will be conducted to assess risk factors associated with AKI. Baseline characteristics will be evaluated via means and standard deviations. Categorical variables will be compared using the Chi square or Fisher's exact, where appropriate. The Student paired t or Mann Whitney U test will be used to assess continuous variables.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-147

Poster Title: Incidence and risk factors associated with tacrolimus-induced posterior reversible encephalopathy syndrome in allogeneic hematopoietic cell transplant recipients

Primary Author: Paul Avenoso, Hospital of the University of Pennsylvania, PA; **Email:** michael.kee@uphs.upenn.edu

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Purpose: The incidence and risk factors associated with tacrolimus-induced posterior reversible encephalopathy syndrome (PRES) in hematopoietic cell transplant (HCT) recipients remains poorly characterized. The objective of this study is to define the incidence and risk factors associated with PRES following HCT.

Methods: This study will be submitted to the University of Pennsylvania Institutional Review Board for approval. This is a retrospective case-control study that will include HCT recipients receiving tacrolimus-based graft-versus-host disease (GVHD) prophylaxis. Patients will be excluded if they are not receiving tacrolimus, < 18 years old, or possess other possible PRES induced etiologies (such as infection, metabolic disturbances, thrombotic thrombocytopenic purpura and structural neurological lesions). The following data points will be collected: patient age, weight, sex, past medical history (hypertension and chronic kidney disease), conditioning intensity, graft source, conditioning regimen, diagnosis of GVHD, GVHD prophylaxis regimen, day of PRES onset (following HCT), tacrolimus dose and levels 24 and 48 hours prior to PRES onset, tacrolimus levels on the day of PRES onset, pertinent laboratory parameters (serum creatinine, magnesium, blood pressure liver function tests), diagnosis of PRES (clinical findings or objective radiographic imaging). All data will be recorded without patient identifiers and maintained confidentially. The primary endpoint is to identify risk factors associated with PRES in HCT recipients.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-148

Poster Title: Implementation of reminder software in the operating room and its effect on the appropriate re-dosing of intra-operative antimicrobials

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Additional Author (s):
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Purpose: In order to maintain adequate serum concentrations, certain antimicrobials should be re-dosed during surgery in the setting of a prolonged procedure or large volumes of blood loss. Examples of these antimicrobials include ampicillin/sulbactam, aztreonam, cefazolin, cefepime, penicillin, and clindamycin. In April 2015, reminder software was implemented into EPIC OPTIME to alert anesthesiologists to re-dose these antimicrobials based on procedure length and blood loss. The objective of this study will be to determine the effect of this software on the appropriate re-dosing of intra-operative antimicrobials and the incidence of CDC reported surgical site infections.

Methods: A retrospective, single-center, quasi-experimental study of approximately 200 patients who have undergone a surgical procedure between April 2014 and June 2016 at the Hospital of the University of Pennsylvania will be included. Patients who underwent surgery for < 3 hours, surgery with no or minimal blood loss recorded, and patients with previously identified infections prior to surgery will be excluded. Patients will be assessed one year prior to and after implementation of this reminder software. Data variables that will be collected include patient, surgery, and infection demographics. An interrupted time series analysis will be performed to assess the impact of implementing a reminder alert software on the appropriate re-dosing of intra-operative antimicrobials and descriptive statistics will be used to analyze demographic variables.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-149

Poster Title: Use of granulocyte colony-stimulating factor (G-CSF) in leukopenic patients post-kidney transplantation

Primary Author: Vicky Kuo, Hospital of the University of Pennsylvania, PA; **Email:** stephanie.hamel@uphs.upenn.edu

Additional Author (s):
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Purpose: Leukopenia is a frequent complication following kidney transplantation, which can significantly increase a patient's risk of viral and bacterial infection. In addition to reducing medications that may cause leukopenia, colony stimulating factors (CSFs) have been employed to more quickly achieve white blood cell (WBC) count recovery. However, in the solid organ transplant population, guideline recommendations regarding the use of CSFs are lacking and clinical experience is limited. The objective of this study is to describe the use of granulocyte colony-stimulating factor (G-CSF) when prescribed to help achieve WBC count recovery in kidney transplant recipients with leukopenia.

Methods: This study will be conducted at our post-renal transplant clinic and has been approved by the Institutional Review Board. The electronic medical record will be used to retrospectively identify kidney transplant recipients who were prescribed at least one dose of G-CSF between January 1, 2013 and June 30, 2016. For the purpose of data analysis, we will define clinical leukopenia as WBC less than 3000 cells/mm3 based on previous literature. The following baseline data will be collected at the time of leukopenia: patient demographics, indication for kidney transplantation, type of kidney transplantation, donor and recipient cytomegalovirus (CMV) status, induction and maintenance immunosuppression regimen, opportunistic infection prophylaxis regimen, serum creatinine, and CMV polymerase chain reaction (PCR). WBC, absolute neutrophil count (ANC), and transplant medication regimen will be collected at the following time points: 1-2 weeks prior to leukopenia, at the time of leukopenia, and at 1 week, 1 month, and 3 months after leukopenia. Provider documentation

and laboratory data will be reviewed to evaluate the following: time from transplant to leukopenia, G-CSF dose prescribed, number of G-CSF doses administered, days to WBC count recovery, changes in immunosuppression and opportunistic infection prophylaxis regimens due to leukopenia, biopsy-proven acute rejection within 3 months, and opportunistic infection or infection requiring hospitalization within 3 months.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-150

Poster Title: Cisatracurium dose finding in medical intensive care unit patients with acute respiratory distress syndrome

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Additional Author (s):
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Purpose: Neuromuscular blockade with cisatracurium has been shown to improve mortality in the acute respiratory distress syndrome (ARDS) population. Train-of-four (TOF) monitoring is a commonly used method for determining depth of neuromuscular blockade, however correlation between dose and train-of-four response in ARDS patients is not well elucidated. Alterations in factors affecting the pharmacokinetics and pharmacodynamics of cisatracurium may impact the dose required to achieve adequate TOF response. The objectives of this study are to determine the average steady-state dose of cisatracurium required to elicit adequate neuromuscular blockade measured by TOF and to determine what factors impact the dose.

Methods: This is a single-center, retrospective cohort study pending approval by the Institutional Review Board at the Hospital. All patients receiving cisatracurium infusion without interruption for at least 12 hours between 7/1/11 and 6/31/16 will be cross referenced with medical intensive care unit admissions and the internal ARDS database to target an estimated inclusion of 250 patients. Provider documentation will be reviewed to confirm the diagnosis of ARDS. Patients will be excluded if they are receiving cisatracurium for indications other than ARDS, do not have a TOF documented at baseline or during treatment, have a history of neuromuscular disease, or are pregnant. The following data will be collected at baseline: age, gender, race, weight, serum creatinine, PaO2:FiO2 ratio, Simplified Acute Physiology Score II (SAPS II), and body mass index (BMI). Adequate neuromuscular blockade is defined as a TOF response of one to two. Steady state dose will be defined as two consecutive TOF measurements of one to two recorded at least three but no more than six hours apart.

Temperature and pH will be captured during steady state and analyzed as secondary outcomes with a priori identified predictors of dose including age, BMI, and presence of acute kidney injury. Dose findings will be described using measurements of central tendency. Secondary outcome measurements will be evaluated using multivariable logistic regression.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-151

Poster Title: Evaluation of the use of benzodiazepines in elderly patients who are taking opioid medications

Primary Author: Sebastian Choi, Lake Erie College of Osteopathic Medicine/Millcreek Community Hospital, PA; **Email:** sebastianchoi28@gmail.com

Additional Author (s):
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Purpose: The US Food and Drug Administration recently added a boxed warning on the opioid and benzodiazepine labeling about serious risks and death when combining opioid pain or cough medications with benzodiazepines. The objective of this study is to evaluate the use of benzodiazepines in elderly patients who are also taking opioid medications in a sub-acute rehab/long-term care facility.

Methods: This is a medication use evaluation conducted at the LECOM Senior Living Center in Erie, PA. This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients who are on opioids and benzodiazepines, opioids alone, or benzodiazepines alone. The data that will be collected includes patient's age, opioid or benzodiazepine agents given, indications for such medications, directions of use (scheduled versus as needed), history of as needed administration, duration of combined use, and changes in doses (such as gradual dose reductions). Provider documentation will also reviewed for identifying reasons for continued use or decreased doses. If available, pain scale ratings, before and after opioid administration, will be obtained. All data will be recorded without patient identifiers and maintained confidentially in a secure location within the institution. Collected information as well as providers' medication prescribing and discontinuing habits will be reviewed and analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-152

Poster Title: Retrospective review of an ambulatory clinical pharmacist's interventions within a primary care ambulatory collaborative care team

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Purpose: The patient centered medical home (PCMH) model is designed to improve the quality, efficacy and safety of primary care by providing the individual patient comprehensive and integrated healthcare through multidisciplinary care. Lancaster General implemented an ambulatory collaborative care team within each PCMH. The team consists of a care manager, social worker, community health worker and ambulatory pharmacist. One goal of this team is to assist patients that have complex diseases, multiple chronic illnesses, frequent hospitalizations and/or psychosocial barriers. The purpose of this study is to review the role of the ambulatory pharmacist within this specific type of team.

Methods: This is a single center, retrospective, observational study. One-hundred and twenty-five adults (age greater than or equal to 18 years) with an institution specific, general risk score of greater than 10 seen by an ambulatory care multidisciplinary team from October 1, 2015 to November 30, 2016 will be retrospectively entered into a database. The general risk score is calculated by factors including: patient disease state, social and behavioral determinants, number of emergency department visits and number of hospital admissions. The primary objective is number of interventions made by a clinical ambulatory care pharmacist. Secondary objectives include type of interventions made by the clinical ambulatory care pharmacist, medication adherence of patients seen by the team, identification of potential interventions in patients not referred to the clinical ambulatory care pharmacist, and type of medication errors identified by the clinical ambulatory care pharmacist. Data collected includes: demographic information, serum creatinine, estimated glomerular filtration rate, glycosylated hemoglobin A1c, low density lipoprotein, serum blood glucose, serum potassium and blood pressure.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-153

Poster Title: Impact of pharmacist-driven management on compliance to an institution-specific perioperative bridging algorithm versus standard of care

Primary Author: Katlyn Combs, Lancaster General Health/ Penn Medicine, PA; **Email:** kcombs2@lghealth.org

Additional Author (s):
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Greta Kemmer

Purpose: Perioperative bridging management remains an ongoing topic of interest for surgeons, primary care providers and pharmacists. Limited evidence is available on provider compliance to institution-specific perioperative anticoagulation bridging algorithms and whether compliance has an effect on patient-oriented outcomes. This study was designed to determine whether pharmacist-driven management of a perioperative bridging anticoagulation protocol improves compliance to an institution-specific perioperative bridging algorithm.

Methods: This study is a retrospective cohort at Penn Medicine Lancaster General Health and has been submitted to the Institutional Review Board for approval. A report will be generated to identify those patients who had an "active anticoagulation episode" and underwent a procedure or surgery at Penn Medicine Lancaster General Hospital between October 1, 2016 and December 31, 2016. A password-protected, HIPAA-compliant software program will be designed to randomly choose a total of 50 patients for each group who meet the inclusion and exclusion criteria. The study will compare compliance to a perioperative anticoagulation bridging algorithm between Group A (Pharmacist-Driven Management; those patients whose perioperative bridging anticoagulation plan was managed by a pharmacist) and Group B (Standard of Care; those patients whose perioperative bridging anticoagulation plan was not managed by a pharmacist). Secondary outcomes will include individual components of compliance, acceptance rate of pharmacist bridging recommendations, thromboembolic and major bleeding events within 30 days of procedure, readmissions related to thromboembolism or bleeding and death due to thromboembolism or bleeding.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-154

Poster Title: Is there a difference between high dose 3-factor and 4-factor prothrombin complex concentrate for emergent warfarin reversal?

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Additional Author (s):
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Purpose: There are limited data comparing 4-factor prothrombin complex concentrate (PCC) to high dose 3-factor PCC in regards to efficacy and safety when utilized for emergent warfarin reversal. The purpose of this study is to compare the effect on INR of 3-factor and 4-factor PCC in patients receiving warfarin in need of emergent reversal due to a bleeding event or surgical procedure.

Methods: This study will be submitted to the Institutional Review Board for approval. The proposed investigation is a single-center retrospective analysis at a community teaching hospital that will be conducted by pharmacist evaluation of any inpatient who meets the criteria for inclusion. All patients who were taking warfarin and in need of emergent reversal of their INR for which either high dose 3-factor (35 units/kg) or 4-factor PCC were ordered will be identified using the institution's electronic health record. The projected number of patients to be included in the study is approximately 100, with an estimated number of 50 patients receiving 4-factor PCC, and 50 patients receiving 3-factor PCC. The demographic data that will be collected includes: sex, age, actual body weight, ideal body weight, indication for PCC, baseline INR, INR following PCC administration, PCC dose, Vitamin K administration and dose, fresh frozen plasma administration and dose, hemoglobin and hematocrit, platelet count, blood pressure upon admission, antiplatelet use, warfarin indication, and renal function. For assessment of the occurrence of adverse effects, progress notes, doppler and computerized tomography scans will be evaluated for evidence of any thrombosis.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-155

Poster Title: Time to first antibiotic administration in adult oncology patients with fever who present to the emergency department and infusion centers

Primary Author: Breana Goscicki, Lehigh Valley Health Network, PA; **Email:** breanagoscicki@gmail.com

Additional Author (s):
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Purpose: Febrile neutropenia (FN) is a complication that occurs in 10-30% of oncology patients receiving chemotherapy and is deemed a medical emergency. Due to the likelihood of quick progression of infection and the significant mortality associated with FN, it is recommended that patients receive timely empirical antibiotic therapy upon presentation. The purpose of this retrospective study is to assess the time to first antibiotic administration (TTA) in adult oncology patients presenting with fever to the emergency department (ED) and infusion centers as well as summarize the antibiotic regimens patients received.

Methods: This study will be submitted to the Institutional Review Board for approval. Emergency department records, adult oncology infusion center records, and admission records will be used to generate a list of patients that presented and were assigned a diagnosis of malignancy and fever or neutropenic fever between June 1, 2013 and September 30, 2016. Patients will only be included if they received chemotherapy in the 30 days prior to presentation. Patient data to be collected includes: medical record number, age, gender, height, weight, race, date and location of presentation, date of last chemotherapy treatment, temperature, absolute neutrophil count (ANC), cancer type, patient allergies, time of registration, time of blood culture order release, time blood culture drawn, intravenous line status, time of first antibiotic order, time of first antibiotic order verification, time of first antibiotic administration (TTA), and antibiotic regimens (drug, dose, route). Additional data to be collected for patients presenting to the emergency department include: acuity description assigned at presentation, admission status, time of admission (if applicable), sepsis alert status, and time of sepsis alert (if applicable). The percentage of patients that receive antibiotics within 60 minutes of presentation will be calculated, as well as the average and median TTA. Depending on the sample size, subgroup analyses may also be conducted.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-156

Poster Title: Determination of secondary encounter rates for urinary tract infections in patients treated with cephalexin

Primary Author: Aubrey Goertel, Lehigh Valley Health Network, PA; **Email:** aubrey.goertel@lvhn.org

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Purpose: Fluoroquinolones historically been the agents of choice for treatment of urinary tract infections. Increasing resistance rates paired with their propensity for adverse effects led to the preferential use of alternative agents for treatment. First-generation cephalosporins have become popular agents for treatment of urinary tract infections due to their narrow antimicrobial spectrum, limited adverse effect profile, and retained susceptibility. The purpose of this retrospective chart review is to evaluate the rate of return within 30 days for patients admitted for a urinary tract infection and received a prescription for cephalexin upon discharge.

Methods: This study will be submitted to the Institutional Review Board for approval. Electronic medical records will be used to identify patients 18 years of age and older, admitted to an adult unit for urinary tract infection and discharged with a cephalexin prescription between December 1, 2015 – June 30, 2016. Patient and clinical data to be collected will include: medical record number, date of birth, age, gender, pregnancy status (ICD-10 code Z33.1) at time of admission, history of diabetes (ICD-10 code E10.9 or E11.9) at time of admission, hospital length of stay, intensive care unit admission, intensive care unit length of stay, cephalexin regimen (dose, frequency and duration), microbial organism obtained from urine culture, and susceptibility of uropathogen(s) to levofloxacin/ciprofloxacin, cefazolin and trimethoprim/sulfamethoxazole. Rate of return encounters to an urgent care, doctor's office, emergency room or hospital within 30 days for a urinary tract infection that have received additional antibiotics will be calculated. Clinical risk factors will be assessed to identify independent predictors for return. Cephalexin dose, frequency and duration will also be characterized. Patients that will be excluded from this study include patients with genitourinary

abnormalities and patients with a urinary tract infection within the previous 30 days of admission.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-157

Poster Title: Determining the effect a pharmacist has on pneumococcal vaccination rates in the primary care setting

Primary Author: Katie Schumacher, Millcreek Community Hospital/Lake Erie College of Osteopathic Medicine, PA; **Email:** katie.schumacher@rx.lecom.edu

Additional Author (s):
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Purpose: For pneumococcal vaccination, the Advisory Committee on Immunization Practices (ACIP) recommends all patients receive the Prevnar 13 vaccine at age 65 or older with a Pneumovax 23 vaccine administered at least one year later. The Office of Disease Prevention and Health Promotion (DPHP) reports that in 2008, only 60% of patients over 65 had their pneumococcal vaccine. The healthy people 2020 goal from the DPHP is that 90% of adults over 65 are vaccinated. The purpose of this medication use evaluation is to determine the impact an ambulatory care pharmacist has on pneumococcal vaccination rates in the primary care setting.

Methods: This medication use evaluation is being submitted to the Institutional Review Board for exempt review. The electronic medical record system will be used to identify patients 65 years and older in primary care offices with a pharmacist and without a pharmacist within one health system. A review of each patient 65 years and older will be completed to determine whether they have received a Prevnar 13, Pneumovax 23, neither vaccine or both vaccines. The pneumococcal vaccine administration rates of the two subject groups will be compared. A secondary analysis will be completed in the groups of patients who received both vaccines to assess the average amount of time between the Prevnar 13 and the Pneumovax 23, the appropriateness of the time interval between vaccines, and identify any inappropriate vaccinations such as duplicate vaccine administration. The data will be analyzed and statistical significance will be determined.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 8-158

Poster Title: Accuracy of a standardized vancomycin dosing calculator

Primary Author: Ian Hatlee, Millcreek Community Hospital/Lake Erie College of Osteopathic Medicine, PA; **Email:** ian.hatlee@rx.lecom.edu

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Purpose: A 2009 consensus review by the American Society of Health-System Pharmacists, Infectious Disease Society of America, and Society of Infectious Disease Pharmacists provides recommendations for therapeutic monitoring of vancomycin, including individual pharmacokinetic dosing adjustments and verification of serum trough achievement. A vancomycin dosing calculator was developed based on patient-specific data, pharmacokinetic dosing equations and a standard volume of distribution (Vd) of 0.7 L/kg. The primary objective of this study is to determine the accuracy of this standardized vancomycin dosing calculator in achieving a target trough concentration.

Methods: This study is a retrospective review and will be submitted the Institutional Review Board for approval. A reporting function in the electronic medical record will be utilized to identify patients who both received vancomycin and had a serum trough concentration drawn at our facility between March 1, 2016 and August 31, 2016. The ideal body weight (IBW), adjusted body weight (AdjBW), creatinine clearance, estimated vancomycin volume of distribution, elimination rate constant (ke), half-life, and dosing regimen for each patient was determined using the calculator. Pharmacist and nursing documentation will be reviewed to determine if the serum trough concentration was ordered and drawn at an appropriate time (i.e., 30 minutes before a dose at steady state). The percentage of patients attaining a serum trough concentration within goal range will be evaluated to determine the accuracy of the initial dosing regimen. A subgroup analysis will also be performed in both underweight (actual body weight < IBW) and obese (>130% IBW) patients.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-159

Poster Title: Retrospective evaluation of vitamin K use in patients receiving warfarin

Primary Author: BreAnne DeMarco, Millcreek Community Hospital/LECOM, PA; **Email:** breanne.demarco@rx.lecom.edu

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Purpose: Though several guidelines offer guidance for the use of warfarin reversal with vitamin K, the recommendations are not strong and may not be followed in clinical practice. The primary objective of this study is to evaluate the use of vitamin K to reverse warfarin anticoagulation in patients admitted to the hospital. Secondary outcomes will be the extent to which reversal complies with the guidelines and patient outcomes following reversal.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record will identify patients who have received vitamin K to reverse anticoagulation with warfarin during a hospital stay in the last year. The following data will be collected: patient age, gender, initial international normalized ratio (INR), amount and route of vitamin K given, subsequent INR values, concomitant medications that could contribute to bleeding risk, renal and hepatic function if available, mortality, and readmission within 30 days. Provider documentation will be reviewed to determine the reason for reversal, the indication and home dose of warfarin, adverse events experienced, and the discharge plan for anticoagulation. All data will be recorded without patient identifiers and maintained confidentially. Data will be reviewed to assess compliance with guideline-directed therapy and patient outcomes. Statistical analysis will be done to evaluate actual use of vitamin K versus recommended use of vitamin K and to compare outcomes following reversal of anticoagulation.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-160

Poster Title: Evaluation of Appropriate Proton Pump Inhibitor (PPI) Use in a Primary Care Physician Office

Primary Author: Diana Pak, Moses Taylor Hospital, PA; **Email:** diana.pak@wilkes.edu

Additional Author (s):
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Purpose: PPIs are safe and effective options when used appropriately to treat various gastrointestinal disorders. However, persistent use in the absence of any indication or treatment beyond the recommended duration of therapy may place the patient at risk for several negative effects. These negative effects include Clostridium difficile infection, osteoporosis, bone fractures, hypomagnesemia, and community and hospital-acquired pneumonia. Furthermore recent studies have associated the use of PPIs with an increased risk for chronic kidney disease. The aim of this study is to determine appropriate PPI use in the primary care setting.

Methods: All patients diagnosed with having Helicobacter pylori (H. pylori), gastroesophageal reflux disease (GERD), ulcers, esophagitis, peptic ulcer disease, Zollinger-Ellison syndrome, or Barrett's disease and all patients with an active PPI such as pantoprazole, lansoprazole, rabeprazole, omeprazole, esomeprazole, or dexlansoprazole seen between March 23, 2016 to September 23, 2016 were included in the study. Information was queried from an electronic health record for each patient. All information will be de-identified. The data will be analyzed to determine patients taking a PPI without an indication. Further analysis will be completed to determine patients taking a PPI with an indication but beyond the recommended duration of therapy.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-161

Poster Title: Assessment of a pharmacist-driven initiative to reduce inpatient falls in a community hospital

Primary Author: Andrea Lordan, Paoli Hospital, PA; **Email:** lordana@mlhs.org

Additional Author (s):
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Purpose: Falls that occur in hospitalized patients are a prevalent patient safety problem. Morbidity and mortality resulting from inpatient falls place a substantial financial burden on the health care system, due to the need for additional treatment and prolonged hospital stays. Multiple factors have been associated with falls, including age, mental status, and illness severity. Although fall risk is multifactorial, medications that cause sedation, orthostatic hypotension, and cognitive impairment are also known to increase the risk of falls. The goal of this study is to implement a pharmacy-driven initiative to reduce the number of inpatient falls in a community hospital.

Methods: A medication-based screening tool will be developed to determine patients at a high risk of falls. Medications in high-risk classes will be assigned a point value based on their side effects and a medication-based fall risk score will be calculated. A 4-month retrospective review of inpatient falls occurring on a single unit of a community hospital will be conducted to determine how many of these patients would be identified as a fall risk using the new medication-based screening tool, compared to those identified using the current nursing assessment. A 4-month prospective phase of the study will review the medication profiles of patients on the same unit and determine a medication-based fall risk score for each patient. For patients determined to be at a high risk of falls, verbal medication education will be provided in order to review the side effects of medications which may increase the risk of falls. Patient counseling sessions will reinforce education provided by nursing, enabling an interdisciplinary approach to fall prevention. Recommendations regarding therapy adjustment will also be provided to physicians, based on the appropriateness of the medications and corresponding dose for each patient. The number of inpatient falls on this unit will be compared before and

after the implementation of this pharmacy-driven initiative in order to assess the impact of pharmacist involvement on inpatient falls.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-162

Poster Title: Evaluation of pharmacists' attendance during medical resuscitations in a community hospital

Primary Author: Marissa Cushing, Paoli Hospital, PA; **Email:** cushingma@mlhs.org

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Purpose: Pharmacists attending medical resuscitations have been shown to improve patient outcomes, decrease deviations from advanced cardiac life support (ACLS) guidelines, and is appreciated by other medical professionals. Currently, a 222 bed, level II trauma community hospital does not have pharmacists attending medical resuscitations outside the emergency department. This study will analyze the benefits to patient care from having trained pharmacists attend medical resuscitations throughout the entire community hospital. Additionally, this study will assess the perception of the health care resuscitation team towards pharmacists' attendance during medical resuscitations.

Methods: This is a single center, retrospective review of medical resuscitations from January 2015-September 2016. Data will be collected regarding the patient's location at the time of the arrest, the duration of the arrest, the patient's outcome at the conclusion of the arrest, and whether ACLS guidelines were followed. If ACLS guidelines were not followed, the deviations will be reviewed. A survey will be distributed to the resuscitation team members in order to obtain their perspective of having pharmacists present at medical resuscitations. From October 1, 2016 to present, trained emergency department or resident pharmacists will attend medical resuscitations Monday through Friday 0800 to midnight. The pharmacists will assist with the appropriate selection and timing of medication administration, prepare medications for administration, confirm IV compatibilities, calculate infusion rates, and verify pump settings. Data will continue to be collected as before with the addition of noting if a pharmacist was present. The survey will be re-distributed to the resuscitation team members near the completion of the study. A comparison will be done between medical resuscitations with and without pharmacists present to see if pharmacists' attendance improves patient outcomes and increases adherence to ACLS guidelines. The first survey will be compared with the second

survey to observe any changes in the resuscitations teams' perspective on pharmacists' attending medical resuscitations and if pharmacists' attendance is preferred.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-163

Poster Title: Development and implementation of a pharmacy driven long acting antipsychotic administration service in a community pharmacy: a feasibility study

Primary Author: Sarah Goldsborough, PennState Health St. Joseph, PA; **Email:** sgoldsborough@pennstatehealth.psu.edu

Additional Author (s):

Purpose: In the United States, greater than 2 million Americans have a diagnosis of schizophrenia. One major contributing factor for symptom relapse as well as hospitalization is non-adherence. Long acting antipsychotic injections can provide a valuable treatment option for this patient population. In the United States there are almost 300,000 pharmacists while there are only 50,000 psychiatrists. Pharmacists can play a crucial role in assisting patients with accessing and administering long acting antipsychotics. The objective of the study is to evaluate the feasibility of implementing a pharmacy driven long acting antipsychotic administration service in a community pharmacy setting.

Methods: This is an observational study with a run in period that includes meeting with local behavioral health providers to promote the new pharmacy service of administering long acting antipsychotics. Patients are included if they are above the age of 18, have a valid prescription for the long acting antipsychotic, the medication is acquired through a licensed wholesaler or other source where chain of custody can be validated, have received at least one dose of a long acting antipsychotic and have no contraindications to receive the prescribed medication. Patients are excluded if they refuse the injection. Data will be collected for all patients receiving a long acting antipsychotic on a standardized data collection form. Patients will be properly de-identified and confidentiality will be maintained. Descriptive statistics will be used to demonstrate the number of patients enrolled as well as adherence rate of long acting antipsychotic administration

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-164

Poster Title: Development of a pharmacy-driven penicillin skin testing program to optimize the selection of antibiotics in patients with self-reported penicillin allergy

Primary Author: Jacqueline Chirico, Pennsylvania Hospital, PA; **Email:** jacqueline.chirico@uphs.upenn.edu

Additional Author (s):
Lindsay McDonnell

Purpose: With the emergence of multidrug resistant pathogens, it is especially important to utilize current antibiotics correctly and when properly indicated. Penicillin skin tests exist as a way to potentially decrease the use of second-line antibiotics, while providing treatment with a preferred beta-lactam antibiotic. It is supported as an intervention to improve patient care by optimizing antibiotic utilization, which leads to improved efficacy, reduced resistance, and decreased cost. The purpose of this project is to develop a pharmacist-led penicillin skin testing program in order optimize antibiotic selection in patients who present with a self-reported penicillin allergy.

Methods: This study is undergoing Institutional Review Board evaluation for approval. Pending addition of PRE-PEN (benzylpenicilloyl polylysine) to inpatient formulary, a pharmacy-driven protocol for skin-testing in patients with a self-reported penicillin allergy will be developed in collaboration with an infectious disease physician. Both pharmacists and physicians will be trained on how to perform the skin test, including proper intradermal administration techniques, documentation requirements, and the proper procedures to follow if the patient has an anaphylactic reaction. Prior to testing, the pharmacist will screen patients for eligibility and obtain informed consent. Patients with a self-reported history of a penicillin allergy where penicillin or a beta-lactam antibiotic is the drug of choice for treatment will be considered eligible. While testing, the patient will be observed and ensure that every step is done according to the protocol. After testing, the pharmacist will document the results and may assist physicians in optimizing antibiotic selection if the allergy is proven to be negative. Following the implementation of this program, an evaluation will be conducted to compare the optimal beta-lactam antibiotic that was used to treat the patient with the alternative agent that was avoided due to the negative penicillin skin test. This evaluation will also compare cost

saved as a result of doses of alternative treatment avoided, while taking into account the cost to conduct the skin test itself.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-165

Poster Title: Evaluation of outcomes in specialty pharmacy management of hepatitis C

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Purpose: If left untreated, hepatitis C can lead to chronic liver disease, cirrhosis, and cancer. Direct acting antivirals carry a hefty price tag, insurance hurdles, multiple drug interactions and the potential for non-adherence. The Penn Specialty Pharmacy can ensure patients begin therapy by initiating prior authorizations and performing medication reconciliation. The specialty pharmacy is also equipped in patient education and stressing adherence to lab work/follow up. The primary purpose of this study is to evaluate the percentage of patients who achieved sustained virologic response (SVR) 12 weeks after completion of therapy in a pharmacy hepatitis C program in a gastroenterology clinic.

Methods: A retrospective chart review of patients who were initiated on direct acting antivirals at Penn Gastroenterology Clinic between January 1st,2016 to August 31st, 2016. The primary endpoint is the percentage of patients who achieve SVR at 12 weeks post treatment determined by completed lab work. Secondary endpoints will include pharmacist interventions (drug interaction screens, treatment recommendations, dose adjustments), time to initiation of therapy, compliance with monthly lab work and adherence to treatment.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-166

Poster Title: Clinical outcomes and costs associated with removing a combination long-acting beta-agonist and inhaled corticosteroid product from the formulary in managed care Medicaid plans

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Additional Author (s):
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Purpose: Formulary management is a cornerstone of managed care practice. When properly utilized, it allows managed care organizations to promote the use of high quality, cost effective medications that improve patient outcomes. To further control medication costs, manufacturers' rebates can be considered in formulary decisions when safety and efficacy are considered comparable. Even when additional savings are taken into account, it is not known if the total administrative and clinical expenditures due to a formulary change outweigh savings. The purpose of this study is to investigate the total clinical and financial impact of removing a combination inhaler product from the formulary.

Methods: The study is a retrospective, observational review; therefore, it will not require Institutional Review Board approval. Pharmacy databases will identify patients 12 years of age and older who have a diagnosis of asthma and had at least 2 fills of Advair during a one year period prior to formulary removal. These patients must have continuous enrollment in their health plan during the time period of the study defined by no more than 30 days of coverage lapse. The following data will be collected and analyzed: patient demographics; cost difference between Advair, Symbicort, and Dulera; cost of member outreach; call center and prior authorization volume; medication adherence; and emergency room visits, hospital admissions, and outpatient visits related to asthma. All data will be recorded without patient identifiers to maintain confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-167

Poster Title: Analysis of tighter control of buprenorphine-containing products and its effect on utilization for a Medicaid plan

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Additional Author (s):
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Purpose: Opioid addiction and deaths from opioid use have grown into a troubling problem throughout the United States. While intended as treatment for patients with addiction to opioids and other licit and illicit drugs, buprenorphine-containing agents come with an element of risk with their long-term use. Buprenorphine-containing agents are increasingly associated with incidents of diversion and members can sometimes suffer from physical dependence, withdrawal symptoms, and psychological issues. The objective of this study is to determine how tighter regulation of prescribing criteria will impact the overall utilization of buprenorphine products.

Methods: The study is an observational review and will therefore not require Institutional Review Board approval. The effective date of the new criteria will occur on November 1, 2016. The study will be conducted over a six-month period and split into two three-month intervals. There will be an assessment of the pre- and post-implementation periods to evaluate the impact of more stringent prior authorization criteria. The following data will be collected and reviewed: change in call center volume, prior authorization metrics, total number of claims, and cost spent. Provider outreach will also be conducted to assess how prescribing patterns change with tighter criteria in place. All data will remain confidential and will not include any patient identifiers.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-168

Poster Title: Impact of a pharmacy resident's intervention(s) on blood pressure control in patients with diabetes and uncontrolled hypertension

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Purpose: Despite a plethora of data supporting pharmacists' positive impact on patient blood pressure (BP) control, no studies have specifically assessed similar interventions by a pharmacy resident within a primary care physician (PCP) office setting. This study will investigate the impact of pharmacy resident intervention on patients with comorbid type 2 diabetes (T2DM) and uncontrolled hypertension (HTN) in physician offices that are part of an Accountable Care Organization and Patient Centered Medical Home. Additionally, this study will evaluate the perception and satisfaction of physicians, physician assistants, and nurse practitioners regarding these pharmacy resident services.

Methods: Patients aged 18-75 years with comorbid T2DM and uncontrolled HTN, defined as systolic BP >139mmHg and/or diastolic BP >89mmHg, will be identified from the electronic medical record (EMR) of the resident's PCP practice setting and sent a letter inviting them to enroll in the study. To qualify, patients must be on a minimum of seven medications including at least one anti-hypertensive. Upon receiving consent, enrolled participants will be randomly divided into intervention and control groups. The resident will individually meet with intervention group patients either telephonically or face-to-face to review medications, provide counseling, intervene with the physician, and offer follow-up. BP will be measured two months (+/- seven days) from the resident intervention. The control group will receive the standard of care from their PCP but will not meet individually with the pharmacy resident. Data collected from the EMR and intervention meeting will include, but is not limited to: patient age, gender, allergies, body mass index (BMI), BP, lifestyle factors, medications, medical history, and

resident intervention. Results in terms of BP control will be compared between the groups at the conclusion of the study. In addition, a final survey will be administered to physicians, physician assistants, and nurse practitioners to assess their perception of the role and effectiveness of the pharmacy resident interventions.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-169

Poster Title: Assessing pharmacist impact on long- term use of proton pump inhibitors in an ambulatory clinic

Primary Author: Sandra Rumyantsev, Reading Hospital, PA; **Email:** sandra.rumyantsev@gmail.com

Additional Author (s):
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Purpose: The primary objective of this study is to assess pharmacist impact on reducing long-term proton pump inhibitor (PPI) therapy relative to treatment recommendations for specific indications. Evidence shows that prolonged PPI use is a risk factor for adverse effects including Clostridium difficile associated diarrhea, osteoporosis related fractures, pneumonia, and rebound acid hypersecretion. Limiting use in the outpatient setting can reduce the potential for adverse events and minimize health care burden.

Methods: A report will be obtained of clinic patients over 18 years of age who have been on PPI therapy for greater than 4 weeks. The need for continued treatment or alternative therapy will be considered. Pharmacologic recommendations will be communicated as a message to the provider via electronic medical record. Recommendations may include discontinuing/tapering PPIs or initiating alternative therapy. Non- pharmacologic recommendations may include dietary and lifestyle modifications. The provider may refer patients to the pharmacist for counseling. The following data will be collected: patient demographics, indication for PPI use, PPI regimen, concomitant interacting medications, adverse effects, number of patient charts evaluated, number of patients counseled by pharmacist, and number/type of recommendation made (pharmacologic vs. non- pharmacologic). The number of recommendations and rate of acceptance by the provider will be used to assess the impact of pharmacists in the ambulatory clinic.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-170

Poster Title: Evaluating the impact of pharmacist recommendations in patients with metabolic syndrome at an outpatient psychiatric clinic

Primary Author: Rimmal Khan, Reading Hospital, PA; **Email:** rimzahid@gmail.com

Additional Author (s):
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Purpose: Second-generation antipsychotics (SGA) have shown significantly decreased extrapyramidal adverse effects as compared to first-generation antipsychotics. The majority of guidelines recommend SGAs as first-line therapy for schizophrenia. However, all SGAs have been associated with metabolic complications. The objective of this study is to assess the impact of pharmacist recommendations for patients with metabolic syndrome receiving SGAs at an outpatient psychiatric clinic.

Methods: Patients receiving oral SGAs at an outpatient psychiatric clinic who meet criteria for metabolic syndrome will be identified through an electronic medical record review. Patients' pharmacologic therapy will be reviewed and patients will be offered counseling on management of weight gain, hyperglycemia, and hyperlipidemia. Pharmacologic recommendations will be made to the outpatient psychiatrist or nurse practitioner. These may include changes to existing therapy as well as initiation of new therapy. Non-pharmacologic recommendations may include dietary and lifestyle modifications. Data collected will include patient demographics, non-pharmacologic recommendations, patient's history of SGA therapy, presence of concomitant disease states relating to metabolic syndrome, and number of recommendations made and accepted. The recommendations, as well as rates of acceptance, will be assessed to determine the need for future pharmacist review of patients with metabolic syndrome at this psychiatric clinic.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-171

Poster Title: Optimizing anticoagulation therapy for the treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) in a hospital based, pharmacist managed anticoagulation clinic.

Primary Author: Nissa Tasnim, Reading Hospital, PA; **Email:** nissa@temple.edu

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Purpose: Warfarin has historically been the principle oral anticoagulant used in the treatment of DVT and PE. The narrow therapeutic window and pharmacokinetic profile of warfarin require significant healthcare resources for safe and effective management. Novel oral anticoagulants (NOAC) have been shown to be equally effective in the treatment of DVT and PE and require less frequent monitoring. The goal of this study is to evaluate warfarin managed patients and assess eligibility for transition to novel oral anticoagulant therapy.

Methods: Chart review from electronic medical record will be completed as part of the patient identification process and further evaluation of anticoagulation management. The collected data will include: patient demographics, thromboembolic history, duration of anticoagulant therapy, relevant medication, disease state history, and international normalized ratio results and frequency. Recommendations to the provider may include continuation of warfarin therapy, transition to NOAC therapy, or discontinuation of therapy if patient has completed the recommended treatment duration. The impact of pharmacist review will be quantified by measuring the rate of anticoagulant therapy changes.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-172

Poster Title: Impact of implementing an antibiotic time out on the time to de-escalation of broad spectrum antibiotics in a community teaching hospital.

Primary Author: Rafah Saad, Saint Joseph Medical Center, PA; **Email:** rsaad@pennstatehealth.psu.edu

Additional Author (s):

Purpose: An "antibiotic time out" is performed 48 to 72 hours after antibiotic initiation wherein the clinician should assess their need, if a narrower spectrum can be utilized, and if they are prescribed at the correct dose, route, and frequency. It should include streamlining or de-escalation of empirical antimicrobial therapy when culture results become available. De-escalation of antibiotic therapy to more targeted or narrow spectrum agents can prevent superinfections, decrease costs, bacterial resistance, and toxicities associated with broad spectrum agents. This study will determine whether implementing an antibiotic time out will reduce the time to de-escalation of empiric therapy.

Methods: This study was submitted to the Institutional Review Board at Penn State Health St. Joseph for approval. Phase I involved a retrospective chart review that included patients 18 years or older that had been hospitalized at least 72 hours with an active order for broad spectrum antibiotics (vancomycin, piperacillin/tazobactam, cefepime, ampicillin/sulbactam and levofloxacin). A computer generated medication utilization report was used to identify possible subjects. Each medical record was reviewed for baseline demographics, antibiotic use (indication, site of infection, start and stop date, therapy modification), culture data (culture results, sensitivity, presence of multi-drug resistant organisms), clinical symptoms and pertinent laboratory data. Time to de-escalation was assessed, where day 1 was the first day the broad spectrum empiric antibiotic was administered. De-escalation was characterized as the discontinuation, reduction in number, or the narrowing of spectrum of the initial empiric antibiotics. For Phase II, an antibiotic time out was implemented and time to de-escalation after implementation was analyzed. Descriptive statistics will be utilized to detect a difference between the time to de-escalation before and after antibiotic time-out implementation.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Evaluative Study

Session-Board Number: 8-173

Poster Title: Assessment of monitoring and compliance of a deep vein thrombosis (DVT) prophylactic dosing protocol with enoxaparin and heparin in obese adult patients

Primary Author: Taylor Warmbrodt, Saint Vincent Hospital, PA; **Email:** twarmbrodt@svhs.org

Additional Author (s):
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Purpose: According to the National Institute of Health, 68.8 percent of adults are overweight or obese. With such a large percent of the population falling into this category, hospitals must often take weight into account when dosing medications. At our institution, an adult medication dosing in obesity protocol was implemented in May 2013 for select antibiotics, enoxaparin, and heparin. Pharmacy is automatically consulted for monitoring heparin and enoxaparin for patients weighing greater than 150 kg. The purpose of this study is to assess monitoring appropriateness, safety, and compliance with the protocol in regards to enoxaparin and heparin within our institution.

Methods: Patients who weighed greater than 150 kg and received either enoxaparin or heparin for deep vein thrombosis (DVT) prophylaxis were eligible for inclusion. Per the hospital policy, if a patient is ordered enoxaparin or heparin for DVT prophylaxis and weighs greater than 150 kg, their dose is adjusted and a clinical pharmacist is consulted to verify appropriateness of the dose as well as to monitor the patient via either an antifactor-Xa level for enoxaparin or an aPTT for heparin. A level is to be obtained if a patient remains on therapy for greater than 72 hours, and doses should be adjusted as necessary. Antifactor-Xa levels should be drawn four hours after an enoxaparin dose and should be between 0.2-0.5 IU/ml and aPTT levels should be drawn one hour after a heparin dose and should be less than 50 seconds. Data was collected for patients admitted between July 1, 2015 through June 30, 2016. Patients were identified from dispensing records and clinical pharmacy consults. Data collection included patient age, sex, weight, dose, number of doses received, whether a level was obtained, the level, timing between the dose and the level, and how many doses the patient received prior to the level.

Results: A total of 170 patients met inclusion criteria, however 159 patients received at least one dose of either enoxaparin or heparin. The average age was 51 years old (range 24-78 years)

and 64 percent of the patients were men. The average weight was 173 kg (range 150-263 kg), with 51 patients prescribed enoxaparin and 108 patients prescribed heparin. In total, 33 percent of patients (n=52) had at least one level drawn and a total of 61 levels were obtained. The level was drawn correctly 57 percent of the time, which was defined as within 180-300 minutes post enoxaparin dose or within 30-90 minutes post heparin dose. Of the levels that were obtained, 16 percent (n=10) were outside of the target range. When assessing compliance with the protocol, 80 percent of patients had a level obtained by 72 hours of therapy while 91 percent of patients had a level obtained by 96 hours of therapy.

Conclusion: Overall, one third of patients who received dose-adjusted heparin or enoxaparin were monitored while on therapy. Of patients monitored, the level was appropriate 84 percent of the time and the level was drawn appropriately greater than 50 percent of the time. Overall, the compliance rate was greater than 90 percent for patients who remained on therapy for at least 96 hours. In conclusion, compliance and monitoring of the obesity protocol are appropriate, however appropriateness of when the level is drawn could be improved.

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 8-174

Poster Title: Impact of a procalcitonin algorithm on antibiotic duration in patients with lower respiratory tract infections

Primary Author: Daniel Nelson, Saint Vincent Hospital, PA; **Email:** danielnelson583@gmail.com

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Purpose: Approximately 37 percent of antibiotic use in hospitals may be inappropriate. Procalcitonin (PCT), a biomarker useful in identifying bacterial infections, has been shown to be effective in decreasing antimicrobial exposure in lower respiratory tract infections (LRTIs). Several randomized clinical trials have demonstrated effectiveness of PCT in the reduction of antibiotic duration. A PCT algorithm was implemented for patients presenting to the hospital diagnosed with a LRTI. The purpose of this evaluation was to analyze the impact of the algorithm on antibiotic duration in patients diagnosed with a LRTI by comparing results from before and after implementation of the PCT algorithm.

Methods: A retrospective chart review was performed on patients diagnosed with a LRTI before and after implementation of the PCT algorithm over two 3-month time frames. Patients with a primary discharge diagnosis of chronic obstructive pulmonary disease (COPD) exacerbation or pneumonia were identified using Internal Classification of Disease, 9th and 10th revision (ICD-9 and ICD-10) codes. Patients were also identified if a PCT was drawn upon admission. Patients were included if diagnosed with a LRTI and admitted to the hospital during the study periods. Patients were excluded if they were less than 18 years old, were not admitted to the hospital, or did not receive antibiotics during admission. Data collection was performed using patients' medical records and included the following: patient demographics, past medical history, antibiotic regimens and duration, length of hospitalization, microbiologic data, imaging data, and 30-day readmission rates. Antibiotic duration was defined as antibiotics administered during the hospital stay plus oral antibiotics prescribed at discharge. The primary objective was antibiotic duration in patients diagnosed with a LRTI before and after implementation of the PCT algorithm. Secondary objectives included overall length of stay, average duration of antibiotics prescribed at discharge, Clostridium difficile infection rates, and 30-day readmission

rates. Descriptive statistics were used to quantify results. A student's t-test was used to compare the primary and secondary objectives from both study periods.

Results: A total of 356 patients were screened for inclusion in the baseline evaluation before the PCT algorithm was implemented, resulting in 179 patients in the final evaluation after accounting for exclusion criteria. There were 231 patients screened after the PCT algorithm was implemented, with 163 patients included in the final evaluation. The average antibiotic duration in the baseline evaluation was 5.7 days compared to 6.4 days after implementation of the PCT algorithm (p equals 0.002). Average length of stay was 5 days before PCT algorithm implementation compared to 3.7 days after algorithm implementation (p equals 0.393). The average duration of antibiotics prescribed at discharge was 2 days before PCT algorithm implementation compared to 3 days after algorithm implementation (p equals 0.001). There was only 1 documented Clostridium difficile infection from the baseline evaluation and no cases reported after implementation of the PCT algorithm. The 30-day readmission rates before and after implementation of the algorithm were 30 patients (16.8 percent) and 39 patients (17 percent), respectively.

Conclusion: The use of a PCT algorithm did not decrease antibiotic duration in patients diagnosed with a LRTI. However, there was a decrease in overall length of hospitalization in patients diagnosed with a LRTI after the PCT algorithm was implemented. The impact of a PCT algorithm on antibiotic duration in patients diagnosed with a LRTI may be apparent in larger and longer evaluations.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 8-175

Poster Title: Evaluation of anticoagulant reversal agent use appropriateness in a tertiary care facility

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Purpose: Anticoagulant reversal agents can be invaluable and even life-saving when selected and administered appropriately. However, these agents can be both harmful to the patient and costly to the administering institution if improperly employed. Anticoagulant reversal agents are indicated only for severe active bleeding, urgent procedures, and supratherapeutic INR in some cases. One study reported appropriate use of phytonadione for warfarin reversal as low as 25 percent, while data regarding newer agents is lacking. The purpose of this study was to evaluate the use and appropriateness of anticoagulant reversal agents in a community hospital to identify potential areas for improvement.

Methods: A list of patients who were ordered an anticoagulant reversal agent, including phytonadione within the last two months or prothrombin complex concentrate (PCC), anti-inhibitor coagulant complex, or idarucizumab within the last year, was generated via a central pharmacy dispensing report. A retrospective electronic chart review was then performed to gather patient demographics, reason for admission, anticoagulant regimen, anticoagulation indication, reason for reversal (including bleeding stratification), reversal agent and dose used, ordering service, administration lag-time (time between reversal agent order and administration), and labs of interest (such as INR). Any patient dispensed one of the previously mentioned reversal agents was included in the chart review. Patients were excluded from data analysis if the reversal agent was not administered. Appropriateness of anticoagulant use and dosing was determined using institution-specific reversal guidelines within the Allegheny Health Network Antithrombotic Guide. The primary objective of this study was the composite of appropriate dosing and indication for anticoagulant reversal agents administered. Secondary objectives included appropriate dosing and indication, individually, administration lag-time, INR differences between pre- and post- reversal agent administration, proportion of concurrent

phytonadione and fresh frozen plasma administration with PCC, and rate of repeat lab appropriateness. Descriptive statistics were used to analyze all data.

Results: The study population had a mean age of 73.8 years and was 49.3 percent male. A total of 86 anticoagulant reversal agent administrations, given to 73 patients, were evaluated. Of these administrations were 47 oral phytonadione, 17 intravenous phytonadione, eight subcutaneous phytonadione, 12 PCC, two anti-inhibitor coagulant complex, and zero idarucizumab. Twelve patients received repeat phytonadione administrations. Anticoagulant reversal was performed due to urgent surgery/procedure in 23 patients, elevated INR in 21, major bleeding in 21, minor bleeding in six, and for other reasons in two. Reversal agents were both indicated and dosed appropriately in 53.5 percent of cases. Reversal of anticoagulation was indicated in 76.7 percent of cases, while dosing was appropriate in 69.7 percent of indicated uses. A mean administration lag-time of 68 minutes (standard deviation (SD): 64 minutes) and 94 minutes (SD: 81 minutes) was observed for intravenous and non-intravenous administrations, respectively. A mean difference between pre- and post- phytonadione and PCC administration of -2.5 (SD: 3.3) and -3.9 (SD: 5.0) was observed, respectively. PCC was administered with phytonadione in all cases. However, fresh frozen plasma was inappropriately administered in half the cases. Repeat labs were drawn appropriately in 78.6 percent of cases.

Conclusion: Anticoagulant reversal agent use at the institution was appropriate in 53.5 percent of cases, and a mean administration lag-time for intravenous agents of 86 minutes was observed. These results are suboptimal and indicate a need for additional physician education on appropriate use of anticoagulant reversal agents. Moreover, the observed administration lag-time suggests need for further intervention such as nursing and pharmacy education, improvement in communication, and streamlining of processes. Further study with larger patient sampling is recommended to verify and validate the results of this evaluation.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-176

Poster Title: Evaluation of the use of codeine-containing products at a community teaching hospital

Primary Author: Jessah Villamor, St. Luke's University Health Network, PA; **Email:** jessah.villamor@gmail.com

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Purpose: Codeine-containing products are widely used for a variety of ailments and conditions. Codeine is associated with many adverse effects that can be intolerable. Studies show that a genetic polymorphism can cause individuals to rapidly metabolize codeine leading to supratherapeutic levels of morphine. Reports of deaths in pediatric ultra rapid metabolizers led to the addition of a boxed warning regarding codeine use in children under the age of 18. Despite the risks, codeine is continually prescribed by many practitioners. The purpose of this study is to evaluate the use of codeine-containing products at a community teaching hospital.

Methods: This study has been submitted for approval to the institutional review board at St. Luke's University Health Network. The electronic medical record system will be used to identify all medication orders for a codeine-containing product during the study period. Data will be collected on the utilization of codeine-containing products throughout the network. All data will be recorded without patient identifiers and will be maintained confidentially. The following data will be collected: patient age, gender, admission diagnosis, codeine-containing product ordered, dosage, indication for use, ordering department, treatment duration of codeine-containing product, length of admission, patient-reported adverse effects (if any). Analyses will be conducted to evaluate the findings and identify any patterns of utilization.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-177

Poster Title: Medication use evaluation of rapid infusion rituximab within St. Luke's University Health Network

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Additional Author (s):

Purpose: Rituximab is a monoclonal antibody directed at CD20 antigen on B cells. It has utility in the treatment of a variety of conditions including malignancy and autoimmune conditions. In 2012, the administration of rituximab as a 90 minute infusion in patients that did not experience a Grade 3 or 4 toxicity with the initial rituximab infusion was added to the drug's label. Many facilities, including this health-system adopted "Rapid Rituximab" infusion protocols as a result of this change. The purpose of this evaluation is to assess the adherence to institutional guidelines for the administration of accelerated rituximab.

Methods: This study will be submitted to the Institutional Review Board for approval. Electronic reports will be retrieved from Epic electronic medical record system to conduct a retrospective chart review assessing institutional adherence to the St. Luke's University Health Network (SLUHN) Rapid Rituximab infusion protocol. The following data will be collected from patients receiving rapid infusion rituximab: patient age, gender, ethnicity, diagnosis related to rituximab use, documented steps taken before administering rapid infusion rituximab, and reported adverse events. Administration documentation will be reviewed to determine adherence to the SLUHN Rapid Rituximab protocol. Confidentially will be maintained and data will be recorded without patient identifiers. From the Epic reports obtained, documented components of the protocol followed will be assessed to rate compliance to the administration outlined in the protocol within the institution. Each report will be reviewed on a case by case basis and at the conclusion of its assessment will be rated as compliant or noncompliant. The rates at which documentation is deemed compliant or noncompliant will be calculated to determine adherence to the rapid infusion protocol at St. Luke's University Health Network.

Results: N/A

Conclusion: N/A

Submission Category:

Submission Type: Research-in-Progress

Session-Board Number: 8-178

Poster Title: Effect of Pharmacy Lead Nursing Education on HCAHPS Scores and Nurses Perception of Knowledge

Primary Author: Bryan Klosky, Summit Health Systems, PA; **Email:** Bklosky@summithealth.org

Additional Author (s):

Purpose: The Hospital Consumer Assessment of Healthcare Providers and Systems, or HCAHPS, scores are designed to help consumers assess health systems and make an informed choice about their care. One of the elements HCAHPS scores measure is communication about medicine, specifically how well do healthcare professionals communicate to patients information about their new medications. While nurses do an exceptional job at communicating medication information to patients, there is room for improvement, which may be aided by increased nursing knowledge on medications. The objective of this study is to determine whether pharmacy lead nursing medication education can help to improve HCAHPS scores.

Methods: This study will be submitted to the Institutional Review Board for approval. The target of this study will be ICU/Critical Care nurses at Waynesboro Hospital. Prior to the education the nurses will be given a questionnaire to evaluate their knowledge on certain pharmacy related topics. The questionnaire will collect the following data, the unit they work on, years of experience as a nurse, and their perception of their knowledge on 5 pharmacy related topics. Their perception of knowledge on the subjects will be evaluated on a 5 point Likert Scale, from no knowledge about the subject, to extremely knowledgeable. The educational sessions will be spaced out every 2-3 weeks, and each session will be given at multiple times on multiple days to ensure it reaches as many nurses as possible. Once all the education is complete, the nurses will be given a similar questionnaire to the one they were given previously to rate their knowledge, with the addition of a question asking the nurses to rate the overall usefulness of the educational sessions. These results will be evaluated along with the changes in HCAHPS scores before and after the education, to evaluate if the education had any benefit.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-179

Poster Title: Evaluation of risk factors for Clostridium difficile in hematopoietic stem cell transplant recipients

Primary Author: Sana Mandal, Temple University Health System, PA; **Email:** sanamandal@yahoo.com

Additional Author (s):
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Purpose: Clostridium difficile infection (CDI) is the most common hospital-acquired infection in the United States and is associated with substantial mortality and healthcare burden. Hematopoietic stem cell transplant (HSCT) recipients are at elevated risk for the development of CDI due to numerous factors, including immunosuppression, broad-spectrum antibiotic exposure, and prolonged hospital stay. Additionally, the burden and severity of infection may be underestimated in this population due to abnormalities in traditional diagnostic laboratory markers. The primary purpose of this study is to identify CDI risk factors in HSCT recipients at our health system's bone marrow transplant program.

Methods: This retrospective case-control study is currently under expedited review by the institutional review board. Electronic medical records will be used to identify all HSCT recipients with a documented CDI diagnosis; this cohort will be matched with a subset of CDI-negative recipients. The following data will be recorded from both cohorts to ascertain risk factors: age, type of transplant (allogeneic versus autologous), type/severity of underlying malignancy, type of chemotherapy/conditioning regimen, antibiotic use (type, number, days), colonization with vancomycin-resistant enterococci, presence of graft-versus-host disease, mean length of hospital stay, prior CDI history, history of gastrointestinal surgery, white blood cell count, absolute neutrophil count, baseline serum creatinine level, use of proton pump inhibitors, and use of miscellaneous immunosuppressives (e.g. steroids, immunomodulators). All data will be collected without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-180

Poster Title: Adherence to quality of care indicators in the management of Staphylococcus aureus bacteremia

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Purpose: Staphylococcus aureus bacteremia (SAB) is a common type of bacteremia associated with high mortality, longer hospital stays, and higher treatment cost. Adherence to quality-of-care indicators (QCI) for patients with SAB is associated with decrease in-hospital mortality and earlier discharge and is improved with an Infectious diseases (ID) consultation. The primary objective of this study is to determine adherence to QCIs for the management of SAB and its impact on patient outcomes. The secondary objectives include evaluation of the impact of ID consultation on the adherence to QCIs and outcomes and factors associated with hospital mortality for patients with SAB.

Methods: This retrospective chart review was approved by the Institutional Review Board and includes adult inpatients with one documented positive blood culture growing Staphylococcus aureus. Exclusion criteria includes patients < 18 years old, who died, were initiated hospice care, transferred to another facility, or left against medical advice within 2 days of positive blood cultures, were transferred from another hospital, refused treatment, had a poly-microbial infection, and had missing data. Primary endpoints include percent adherence to QCIs and difference in outcomes based on the number of QCIs adhered. Secondary endpoints include difference in adherence to QCIs between patients that had an ID consult vs. no ID consult, and difference in hospital mortality, length of stay, and recurrence. QCIs assessed were empiric therapy initiated within 72 hours and definitive therapy initiated within 4 days of initial positive blood cultures, appropriate definitive therapy and duration of therapy, collection of blood cultures within 48-96 hours of therapy initiation, and completion of an echocardiography. Data that will be collected includes patients' demographics, comorbidities, disease characteristics, labs, microbiological data, antibiotic therapy, documented ID consult, outcomes, and adherence to QCIs. Percent adherence will be calculated for QCIs. A logistic

regression analysis will determine the factors associated with increase mortality. Categorical data and continuous data will be analyzed using Fisher's exact tests or Chi-square and Student's t-test or Mann Whitney U tests, respectively.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-181

Poster Title: Evaluation of pharmacological agents for sedation or analgesia in order to facilitate noninvasive positive pressure ventilation in the Emergency Department

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Purpose: Noninvasive ventilation (NIV) is commonly utilized in the Emergency Department (ED) as a treatment for acute respiratory failure (ARF). Although efficacious, providing adequate ventilation with NIV can be difficult especially in the setting of patient intolerance. Failure to tolerate NIV can be multifactorial but may be associated with discomfort or agitation. Previous data has suggested that use of sedative/analgesic medications may improve tolerance; however clinicians may be hesitant to administer these agents due to deleterious effects on respiratory drive, mental status, or hemodynamics. The purpose of this study is to evaluate the safety and efficacy of sedatives/analgesics to facilitate NIV.

Methods: This single center, retrospective chart review was approved by the Institutional Review Board at Temple University Hospital and includes adult patients admitted to the ED who received NIV for management of ARF. Patients will be included if they received sedative or analgesic medications for any reason during NIV treatment. Patients less than 18 years of age and those who had insufficient data documented were excluded. The primary objective is to identify the incidence of adverse events following administration of sedative or analgesic medications in patients receiving NIV in the ED. Secondary objectives include identification of risk factors associated with NIV treatment failure and to describe the incidence of NIV failure associated with individual sedative and analgesic agents. Adverse events will be evaluated as a composite definition consisting of the occurrence of one of the following; mean arterial pressure < 70 mmHg or systolic blood pressure < 100 mmHg within 2 hours of medication therapy, or need for endotracheal intubation.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-182

Poster Title: Safety and efficacy of atypical antipsychotics as adjunct treatment for alcohol withdrawal in the surgical intensive care unit

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Purpose: Benzodiazepines are recommended first line for the management of alcohol withdrawal syndrome (AWS). Typical antipsychotics have been used as adjunct agents for AWS patients exhibiting psychosis or delirium. Atypical antipsychotics are potentially equally efficacious with an enhanced safety profile, but there is minimal evidence supporting their use. This study will evaluate the safety and efficacy of atypical antipsychotics in addition to benzodiazepines for the management of AWS in the surgical intensive care unit (SICU). We hypothesize that patients who receive an adjunct atypical antipsychotic will spend more time at goal sedation levels than those who receive benzodiazepines alone.

Methods: This retrospective chart review was approved by the Institutional Review Board. Adult patients admitted to the SICU with a diagnosis code indicating AWS, and who were treated with benzodiazepines will be included. Exclusion criteria include traumatic brain injury, dementia, non-alcohol induced seizure disorder, patients requiring a Richmond Agitation and Sedation Scale (RASS) score less than -2, pregnancy, or a prolonged baseline QTc interval. The primary efficacy outcome is the percentage of time spent at a goal sedation level (RASS of 0 to -2), while secondary outcomes include the cumulative benzodiazepine dose during the SICU stay, duration of benzodiazepine use, and the percentage reduction in benzodiazepine requirements after addition of an atypical antipsychotic. Safety outcomes include the incidence of QTc prolongation and AWS induced seizures.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-183

Poster Title: Impact of baseline characteristics on graft rejection after kidney transplantation

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Purpose: Despite advances in treating acute rejection, graft loss after kidney transplant (KT) remains a significant challenge to clinicians. Limited data exists on demographic variations and the impact on the risk of rejection in the kidney transplant population. Recipient sociocultural variables such as African American race, gender, and age are the most studied variables on rejection risk. However, other baseline characteristics should be further evaluated to better construct individualized immunosuppressive regimens for transplant recipients. The objective of this study is to identify the impact of baseline characteristics on acute graft rejection within 12 months post-transplantation.

Methods: This single-centered retrospective chart review is currently under expedited review by the Temple University Hospital's Institutional Review Board. Our electronic medical record will identify adult patients receiving a kidney transplant at Temple University Hospital's Kidney Transplant Program, between January 1st, 2014 and April 1st, 2016. Subjects will be assigned an arbitrary study ID number, and all information from electronic medical records will be stored in a de-identified fashion. The primary outcome measure is the incidence of biopsy-proven acute rejection at 12 months. Secondary outcomes include incidence of graft loss and patient survival at 12 months. A multivariate logistic regression analysis will be performed in order to identify variables associated with graft rejection.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-184

Poster Title: Impact of weight-based pembrolizumab exposure on safety and efficacy in advanced or metastatic melanoma patients

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Purpose: The FDA approved pembrolizumab in September 2014 for unresectable metastatic melanoma at a weight-based dose of 2mg/kg every three weeks. Due to the high cost of the medication, our institution implemented a dose rounding protocol, where patients' weight-based doses were rounded to the nearest vial size (50mg). Studies have examined the cost impact of dose rounding monoclonal antibodies, including immune-checkpoint inhibitors, but have not evaluated safety or efficacy. The objective of our study is to examine the mg/kg pembrolizumab doses patients received due to rounding, and the impact of the mg/kg dose on safety and efficacy outcomes.

Methods: This descriptive study is a retrospective chart review of patients greater than or equal to 18 years old with advanced or metastatic melanoma treated with at least one dose of pembrolizumab between January 2015 and August 2016. The study will be submitted to the Institutional Review Board for approval. Patients who received prior immune therapy within 6 months or who had treatment delays greater than three weeks will be excluded. The primary outcome will be the occurrence of infusion-related reactions during pembrolizumab infusions based on mg/kg exposure. Secondary outcomes will include immune-mediated adverse effects (iMADEs) and efficacy of treatment up to one year after the initial pembrolizumab dose, also based on mg/kg exposure. The following data will be collected: patient age, gender, ethnicity, weight, height, ECOG performance status, prior therapies for melanoma, prior history of iMADEs, pembrolizumab dose received, number of doses received, physical examination findings, documented infusion reactions, documented iMADEs as defined by the Common Terminology Criteria for Adverse Events (CTCAE), and treatment efficacy as per Response

Evaluation Criteria In Solid Tumors (RECIST) via scans and provider documentation. The impact of iMADES on treatment delays, therapy discontinuation, or treatment with corticosteroids will also be assessed. The mg/kg pembrolizumab dose will be calculated using the patient's weight on the day the dose was administered and received.

Results: n/a

Conclusion: n/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 8-185

Poster Title: Anticipating the clinical impact of a single-source discontinued product: A retrospective review of tromethamine injection for the management of metabolic acidosis

Primary Author: Anna Marie Morlino, Thomas Jefferson University Hospital, PA; **Email:** annamarie.morlino@jefferson.edu

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Purpose: Tromethamine (Tham) injection is an alkalizing agent indicated for severe metabolic acidosis as an alternative to sodium bicarbonate. It is commonly utilized in patients that cannot tolerate sodium bicarbonate, due to the risk of hypernatremia and volume overload. In May 2016, the single manufacturer of Tham, Hospira, ceased production of the medication world-wide. Currently, there are no other manufacturers of Tham and no 503B sterile compounding facilities producing it. This drug use evaluation was completed to assess the frequency of requests for Tham to manage patients at Thomas Jefferson University Hospital and the clinical situations in which it is used.

Methods: This retrospective chart review was approved by the institutional review board. Through MacroHelix, a 340B management software system, patients that received Tham throughout the health-system within the last two years, according to charge data, were identified. Administration of Tham was confirmed through review of medication administration records (MAR) and/or anesthesia records within the patients' medical records. The medical records were further reviewed for each patient to determine past medical history, history of present illness, and clinical status, including acid-base status and serum sodium, at the time of Tham administration. Serum pH was also determined after administration of Tham to determine its efficacy in treating metabolic acidosis in these patients.

Results: Between October 2014 and June 2016, there were 15 instances when 10 patients were charged for Tham. It was confirmed that 9 patients received 13 doses of Tham over the 20 month period. The majority of Tham doses (n equals 11, 84.6 percent) were administered to 8 patients while undergoing a surgical procedure. The most common type of surgical procedure was a liver transplant (n equals 5, 56 percent). Most patients received only 1 dose of Tham,

while some patients received 2 doses, and 1 patient received a continuous infusion. When Tham was dosed during surgery, patients had an average pH of 7.31 at the time it was administered. The average serum sodium at this time was 139.7 miliequivalents per liter. For Tham that was administered outside of the operating room, only one patient had a pH checked prior to administration (pH equals 7.21). The average serum sodium for these two patients at this time was 154 miliequivalents. All patients also received sodium bicarbonate for management of their metabolic acidosis, with approximately 80 percent of patients receiving it both prior to and after Tham. On average, Tham increased pH by 0.05 (range equals negative 0.06 to 0.2).

Conclusion: As the sole manufacturer of Tham has discontinued all production, and no 503B sterile compounding facilities are producing it, it will be important to continue to educate the physicians and other healthcare providers that it is unavailable once the current supply has been depleted. Based on the findings of this drug use evaluation, Tham was largely used in combination with sodium bicarbonate for management of metabolic acidosis. However, it will be important to seek alternatives for the select patients who truly cannot tolerate sodium bicarbonate due to its risk of hypernatremia and volume overload.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-186

Poster Title: Outcomes analysis of an expanded pharmacy managed vancomycin dosing program

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Purpose: Thomas Jefferson University Hospital has offered a pharmacy managed aminoglycoside and vancomycin dosing program in two adult intensive care units (ICUs) for 10 years. In 2015, the pharmacy department expanded this service to the remaining adult ICU's. The objective of this study is to analyze the impact of these expansions on vancomycin dosing and costs. This will be accomplished by retrospectively examining data for patients six months before and six months after the change in protocol.

Methods: This study is a retrospective chart review that will analyze the electronic medical record for patients treated with vancomycin pre- and post-protocol change that allowed physicians the option to select dosing of vancomycin by pharmacy personnel in select ICU's. The pre-protocol implementation study group will consist of patients dosed within three specific units (Cardiac Critical Care Unit (CCU), Neurological Intensive Care Units (NICU), and Jefferson Hospital of Neuroscience Neurological ICU) between November 2014 and April 2015. The post-protocol implementation study group will consist of data collected from patients in the same units from June 2015 to November 2015. Institutional Review Board (IRB) approval will be obtained before data collection. The following data will be collected: duration of therapy, vancomycin trough and random blood serum levels, goal target trough level, timing of antibiotic and associated trough levels, patient age and gender, antibiotic regimens, white blood cell counts, patient temperature, serum creatinine, body weight, height, creatinine clearance, urine output, and infection being treated. Patient information will be de-identified and maintained confidentially throughout the study. The primary outcome will be defined as percentage of vancomycin troughs in therapeutic range. Secondary outcomes will include: time

to therapeutic level, appropriately timed levels, length of stay, length of vancomycin therapy, and associated costs.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-187

Poster Title: Rifampin cost savings for ventricular assist device (VAD) antimicrobial prophylaxis

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Purpose: Ventricular assist devices (VAD) continue to improve survival and quality of life in patients with advanced heart failure. However, device-related infections contribute to significant morbidity and mortality. In 2012, Thomas Jefferson University Hospital (TJUH) adapted a perioperative antibiotic regimen suggested in the REMATCH trial, consisting of intravenous (IV) vancomycin, gentamicin, rifampin and oral fluconazole. One year later, IV rifampin was affected by a drug shortage. Thereafter, the VAD protocol was amended to reflect administration of oral rifampin. The purpose of this study is to determine whether use of the oral formulation has provided a significant cost reduction for TJUH.

Methods: A pharmacoeconomic analysis will be performed between oral and IV rifampin for preoperative antimicrobial VAD prophylaxis utilizing average wholesale price (AWP). Data extrapolated will be used towards future economic analyses.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Case Report

Session-Board Number: 8-188

Poster Title: Ceftaroline synergy with daptomycin for the treatment of vancomycin-resistant enterococcus (VRE) bacteremia: A patient case report

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Purpose: Emergence of vancomycin-resistant enterococcus (VRE) species with decreased susceptibility to daptomycin has given rise to innovative treatment approaches to VRE bacteremia. Enterococcus species-E. faecium or E. faecalis can lead to a variety of infections including bacteremia. E. faecalis has a higher virulence and susceptibility to beta-lactam antibiotics than E. faecium. Therefore, fast identification of the specific species, antibiotic susceptibility, and source identification are crucial to successful treatment and eradication of the microorganism.
To help combat enterococcus resistance, beta-lactam antibiotics are emerging therapy as adjunctive therapy to daptomycin in the treatment of VRE bacteremia. This multi-modal approach to VRE treatment has shown promising results in combating daptomycin resistant and susceptible enterococcus. Ceftaroline is currently the only beta-lactam antibiotic that has exhibited synergy against VRE strains that are both susceptible and non-susceptible to daptomycin. It exhibits this synergistic effect by altering the structural and electrochemical components of the bacterial cell wall. This alteration in the cell membrane results in an increase in daptomycin's cell surface binding ability and bactericidal effect. This novel treatment approach to VRE bacteremia will be reviewed and evaluated for a patient treated for recurrent VRE bacteremia.
A 42 year-old female with a complicated 15-week hospital stay (two separate admissions) was treated for respiratory failure requiring extracorporeal membrane oxygenation (ECMO), acute kidney injury, drug induced liver injury, anoxic brain injury, Escherichia coli urinary tract infection, and E. faecium bacteremia. On the fourth week of her hospitalization the patient developed a fever. Three blood cultures obtained at this time were positive (3/3) for E. faecium, resistant to vancomycin and ampicillin. This VRE strain was daptomycin susceptible, and she

was initiated on daptomycin for 14 days. On week 10 of her hospital stay, blood cultures grew VRE, which remained daptomycin susceptible. Daptomycin was restarted for an additional two-week, and ceftaroline synergy was added for a seven day course. Blood cultures obtained four days after initiation of ceftaroline were negative. A transesophageal echocardiogram (TEE) was performed in an attempt to diagnose endocarditis as the source of the VRE, which returned a negative result. Nine days later, the patient was discharged from the hospital to a rehabilitation facility. The source of the VRE could not be identified at the time of discharge.
Seventeen days after being discharged to a rehabilitation facility, the patient was readmitted due to a fever, and worsening tachypnea. Additionally, a CT scan performed at the rehabilitation center showed a right groin hematoma. An unsuccessful attempt was made to drain the abscess, so a wash out was performed. Blood cultures obtained at the time of the wash-out grew VRE. Tracheal aspirate specimen grew Klebsiella oxytoca. Daptomycin and ceftaroline were discontinued and the patient was started on tigecycline and linezolid. Two days after initiation of tigecycline and linezolid cultures were negative. Due to concerns of linezolid-induced thrombocytopenia and the patient's need for long term antibiotic therapy, linezolid and tigecycline were discontinued and daptomycin was reinitiated for a duration of 6 weeks.

Methods:

Results:

Conclusion:

Submission Category: Cardiology/ Anticoagulation

Submission Type: Case Report

Session-Board Number: 8-189

Poster Title: Treatment of heartmate II left ventricular assist device associated refractory gastrointestinal bleeding with thalidomide: a case report

Primary Author: Catherine Chun, Thomas Jefferson University Hospital, PA; **Email:** chuncatherine@gmail.com

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Purpose: Gastrointestinal bleeding (GIB) is a common complication of continuous-flow left ventricular assist devices (CF-LVADs), caused most frequently by gastrointestinal angiodysplasia (GIAD). Thalidomide, an angiogenesis inhibitor, has been used in the treatment of refractory gastrointestinal bleeding related to GIAD. This case report illustrates the potential use of thalidomide to treat refractory GIB in patients with CF-LVADs. LH is a 60 year old male, with a past medical history significant for systolic heart failure secondary to a non-ischemic cardiomyopathy, who received a HeartMate II CF-LVAD. Seventeen days post LVAD implantation, he presented with symptomatic anemia secondary to a GIB while on therapeutic anticoagulation. At that time, the patient was initiated on appropriate pharmacologic therapy to manage the GIB, and anticoagulation was held intermittently. The source of the bleed was identified as an arteriovenous malformation (AVM). Despite multiple surgical and medical interventions, the symptomatic anemia continued while therapeutic anticoagulation was attempted to be restarted. Due to the refractory bleed, he was started on thalidomide 50 mg daily at bedtime with parenteral anticoagulation. Six days after initiation of thalidomide, he was hemodynamically stable and was restarted on warfarin. Eventually, LH was discharged to a rehabilitation unit, while continuing thalidomide and therapeutic anticoagulation. He was later readmitted twice from May 2016 to October 2016 for symptomatic anemia. Thalidomide has been shown to be useful for refractory GIBs in patients with CF-LVADs based on previous published case reports. In this particular case, thalidomide was found to be beneficial at reducing the number of hospitalizations for this patient, who was unresponsive to conventional therapy. Future studies with larger cohorts would be beneficial to further evaluate the effectiveness of thalidomide for CF-LVAD related GIB.

Methods:

Results:

Conclusion:

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-190

Poster Title: Evaluation of the incidence of prescribed nonsteroidal anti-inflammatory drugs (NSAIDs) in alcohol and opioid detoxification patients with concomitant thrombocytopenia

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Purpose: At our institution, patients with thrombocytopenia related to alcoholism undergoing both alcohol and opioid detoxification are likely to be inadvertently ordered the NSAID ibuprofen, as it is an automatic standard order within the opioid withdrawal protocol. This unintentional combination of ibuprofen and thrombocytopenia may increase the risk for bleeding. Furthermore, these patients are at a heightened risk of falls in light that they are being administered clonidine, buprenorphine, or benzodiazepines, compounding the risk for bleeding. The purpose of this study is to evaluate the incidence of ibuprofen prescription in patients who are undergoing alcohol detoxification and have concomitant alcohol-induced thrombocytopenia.

Methods: This cross-sectional study will be submitted to the Institutional Review Board for approval. During the study period, a daily manual review of electronic health records will be conducted for patients in the Detoxification and Behavioral Health units of the hospital. Patients who are (1) age 18 years or more, (2) are ordered both alcohol and opioid detoxification protocols, and (3) have a platelet count of less than 150,000 will be included in the study. For each patient meeting the inclusion criteria, the following data will be collected: age, gender, actual body weight, platelet count, administration of any anticoagulant and/ or anti-platelet medications (besides ibuprofen), an order for ibuprofen, and the number of doses of ibuprofen received, in any. Descriptive statistics will be used to express the data as frequency, percentage, and mean with standard deviation.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-191

Poster Title: Evaluating the Frequency Delirium Medications are Discontinued Prior to Hospital Discharge

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Purpose: A previous study at this institution performed by a pharmacy resident revealed that 35 percent of patients initiated on medications for the purpose of delirium between August 22, 2014 and August 26, 2015 were discharged home on the medications. Education to the critical care physicians and staff about discontinuation of these medications was issued after the previous study was performed. Discussion during multidisciplinary rounds regarding delirium medications was encouraged. The purpose of this medication utilization evaluation is to determine if these efforts impacted the discontinuation frequency of delirium medications prior to patient discharge from the hospital.

Methods: All patients admitted to either the Medical Intensive Care Unit or the TraumaNeuro Intensive Care Unit treated for delirium with haloperidol, olanzapine, quetiapine, risperidone, or ziprasidone between January 2016 and July 2016 will be assessed for the frequency of discontinuation of these medications prior to discharge from the hospital. The patient must be greater than or equal to 18 years old and have an Intensive Care Delirium Score Checklist score of greater than or equal to 4 or have a diagnosis of delirium listed in a progress note. Patients will be excluded if the medication is being used for treatment indicated for a condition present at time of intensive care unit admission or if medications being used for delirium were appropriate at time of death in the intensive care unit. Data collection will take place during August and September of 2016. These results will be compared to the previous study to determine if improvements have occurred.

Results: n/a

Conclusion: n/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-192

Poster Title: Evaluating the appropriate use of 24% sucrose in neonatal units in a community hospital

Primary Author: April Elling, UPMC Hamot, PA; **Email:** ellingaa2@upmc.edu

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Purpose: Oral sucrose has commonly been utilized in the neonatal population as analgesia for painful procedures. In January 2016, The American Academy of Pediatrics Committee on Fetus and Newborn and Section on Anesthesiology and Pain Medicine published guidance on the management of procedural pain in the neonate recommending that oral sucrose be prescribed and tracked as a medication. Although prescribed, sucrose was not scanned at our institution until June 2016. The purpose of this medication use evaluation is to determine if sucrose is being used appropriately for painful procedures and being scanned into the electronic medication administration record.

Methods: Patients admitted to the newborn nursery and neonatal intensive care unit (NICU) with an order for sucrose will be reviewed daily to determine appropriate sucrose use. Criteria for appropriate use of sucrose is documentation of a painful procedure including a heel lance, lumbar puncture, venipuncture, intramuscular injection, ophthalmic examination, circumcision and intravenous line insertion. Stock counts will take place at least twice weekly to review the proper scanning of the medication. Data will be collected for a 1.5 month period.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-193

Poster Title: Evaluation of pediatric inpatient influenza immunization at a tertiary care hospital

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Additional Author (s):
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Purpose: The 2015 Joint Commission Annual Report listed influenza immunization as a measure with a target compliance rate of 95 percent or more. Our hospital's inpatient compliance rate exceeded that standard in the 2015-2016 flu season. However, since the pediatric population is a small subset of the total inpatient population, it is important to determine if the hospital's current protocol is sufficient in screening and vaccinating pediatric patients. The purpose of this study is to determine if the pediatric inpatients at our hospital are being appropriately screened and immunized for influenza, and to determine the pediatric inpatient influenza immunization compliance rate.

Methods: This retrospective analysis will evaluate the first 10 pediatric inpatients > 6 months of age discharged each month from a tertiary care hospital from October 2015 to March 2016. The patients will be assessed for appropriate screening and, if indicated, vaccination for influenza. The influenza immunization compliance rate will also be determined. Criteria for use of the influenza vaccine include all pediatric individuals 6 months of age and older and less than 18 years of age. The evaluation will assess for each patient whether or not, per protocol, the attending physician placed an order for the influenza vaccine if indicated. If an order was placed, it will be determined whether the vaccine was administered to the patient prior to discharge and, if not, the reason(s) why. The evaluation will assess if the patient received the vaccine prior to admission, if the patient had any contraindications to receiving the vaccine, and if the patient or their guardian(s) refused the influenza vaccine. The Joint Commission/CMS criteria will be used to determine if the hospital's pediatric population met or exceeded the 95 percent compliance rate for influenza immunization in the preceding year.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-194

Poster Title: Cost-effectiveness of MRSA surveillance cultures in patients diagnosed with healthcare-associated pneumonia and treated with vancomycin

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Purpose: Updated IDSA Hospital-acquired and Ventilator-associated pneumonia guidelines have excluded the diagnosis of healthcare-associated pneumonia (HCAP). Recent evidence has shown no increased risk of multi-drug resistant organisms, including MRSA, in the HCAP population. At our institution, MRSA surveillance cultures have been performed on HCAP patients admitted to critical care units. The goal is to discontinue vancomycin if appropriate based on the culture results. This study will identify if implementation of MRSA surveillance cultures is a cost-effective strategy and if it would be a beneficial practice for all inpatients with a diagnosis of HCAP by eliminating unnecessary vancomycin use.

Methods: This study will be submitted to the Quality Improvement Committee for approval. The electronic medical record system will be used along with ICD 9 and 10 codes to identify HCAP patients treated with vancomycin in both critical care and non-critical care areas. Data collection will consist of retrospective chart review from September 1, 2015 to August 31, 2016. Cost of vancomycin therapy per day will be calculated by accounting for the cost of the medication, the cost of drug monitoring, and the cost associated with the pharmacy pharmacokinetic service for vancomycin dosing over the total duration of therapy. Average cost per day of vancomycin therapy will be used to estimate an average total therapy cost depending on the mean duration of therapy. The time associated with the pharmacokinetic service will be self-recorded by participating pharmacists over a one month period and averaged per day. The total cost of vancomycin therapy will be compared to the cost of one time surveillance cultures in the critical care units. The duration of therapy in the critical care units will be assessed from the time of vancomycin initiation to the discontinuation of therapy and compared to the duration of therapy in the non-critical care areas. The cost savings from

the implementation of MRSA surveillance will be assessed in both inpatient areas assess the cost effectiveness of that practice.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-195

Poster Title: Effectiveness of Phenobarbital Loading Doses in Alcohol Withdrawal Syndrome (AWS)

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Purpose: Alcohol withdrawal syndrome is a life- threatening condition. Benzodiazepines are effective GABA stimulants and considered the medications of choice for treatment in this setting. Though evidence supporting the use of phenobarbital is limited, some studies suggest it is beneficial in this patient population. Like benzodiazepines, phenobarbital stimulates GABA receptors. Additionally, phenobarbital inhibits the activity of the excitatory neurotransmitter glutamate. Despite this potential pharmacologic advantage, data comparing phenobarbital with diazepam for the treatment of AWS is lacking. This study will investigate if loading doses of phenobarbital are more effective than loading doses of diazepam in the initial treatment of AWS.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective list of patients that received a loading dose of phenobarbital (defined as > 130mg) or a loading dose of diazepam (defined as >40mg) for the treatment of alcohol withdrawal syndrome will be generated. Patients excluded from the study include those who did not receive standard therapy for alcohol withdrawal syndrome (defined as a phenobarbital taper with or without “as needed” benzodiazepines). Additionally, patients excluded include those who received mixed loading doses of phenobarbital and diazepam as well as those discharged within 12 hours of the loading dose. The following data will be recorded: base line withdrawal assessment score (WAS), withdrawal assessment score 12, 24, and 48 hours following the loading dose, patient age, gender, cumulative phenobarbital dose 12, 24, and 48 hours following the loading dose, cumulative benzodiazepine dose 12, 24, and 48 hours following the loading dose, location in which the patient was admitted, and length of hospital stay.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-196

Poster Title: Incidence of myopathies in patients received cisatracurium alone versus cisatracurium in combination with low dose steroids

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Purpose: Numerous studies have reported myopathies as an adverse effect of aminosteroidal neuromuscular agents, particularly when used in conjunction with high dose steroids. As a result, practitioners at our institution commonly avoid the combination of steroids and neuromuscular blocking agents. Myopathies associated with the combination of low dose steroids and cisatracurium, a neuromuscular blocking agent belong to the benzylisoquinolinium classification is not well established in the literature. We hypothesize that the incidence of myopathy in patients receiving the combination of cisatracurium and low dose steroids will be similar to those patients receiving cisatracurium alone due to mechanistic differences.

Methods: A list of patients who received cisatracurium from September 1, 2013 through September 1, 2016 will be generated from the hospital's electronic medical record. A second list will be generated, identifying patients who received the combination of cisatracurium and low dose steroids (less than 1 g of methylprednisolone equivalent) from the same time period. A cohort from both groups will be randomly selected and a chart review will occur to collect data. Patients of any age, gender or ethnicity will be included. Exclusion criteria are patients who received high dose steroids defined as more than 1 g of methylprednisolone equivalent, or patients with underlying muscular diseases such as rheumatoid arthritis, fibromyalgia, multiple sclerosis, Parkinson's disease, sacroidosis, muscular dystrophies and myasthenia gravis. Using ICD-9 and ICD-10 codes that define myopathies, the difference in the proportion of patients with reported myopathy who received cisatracurium vs. patients who received cisatracurium plus low dose steroids will be analyzed. ICD codes that will be used to define myopathies include: acute necrotizing myopathy, quadriplegic myopathy, myositis, non-traumatic rupture of muscle, muscle weakness, rhabdomyolysis, progressive muscrular atrophy, myoglobinuria,

drug induced myopathy and myalgia. In addition, intensive care unit length of stay, time on ventilator and need for rehabilitation will be assessed.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-197

Poster Title: Evaluation of discharge fluoroquinolone prescriptions for patients with uncomplicated cystitis.

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Purpose: In June 2016, the FDA announced that patients with uncomplicated urinary tract infections (UTIs) should receive fluoroquinolones only if other treatment options are not available, due to disabling and potentially permanent adverse effects involving tendons, muscles, and the central nervous system. Despite FDA recommendations, fluoroquinolones are still frequently prescribed upon discharge as step-down therapy for uncomplicated UTIs following a course of IV antibiotics, when alternative agents exist. This quality improvement (QI) project is designed to evaluate the need for an antimicrobial stewardship program focusing on pharmacist intervention to avoid unnecessary fluoroquinolone prescribing in the setting of uncomplicated UTI upon discharge.

Methods: This QI project is a retrospective chart review of patients who were treated for uncomplicated cystitis and discharged from an academic medical center in Pittsburgh, PA. Patients who were discharged with a prescription for ciprofloxacin from October 2015 to September 2016 were identified utilizing discharge prescription records generated from the hospital's electronic health record. Patients were cross-referenced with all patients with the ICD-10 diagnosis code for cystitis during the same time period. A chart review is to be conducted for patients who meet both criteria. Exclusion criteria will include patients that are less than 18 years of age, patients being treated for a UTI who have additional indications requiring antibiotics, and patients with allergies that would preclude the use of alternative agents. Data collection will include demographics, in-patient antibiotic regimen, discharge antibiotics, allergies, infecting organism [including minimum inhibitory concentrations (MICs) to ciprofloxacin, sulfamethoxazole/trimethoprim, and cefazolin], concomitant medication orders for warfarin and/or tizanidine, and disposition upon discharge.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-198

Poster Title: Drug-associated acute kidney injury identified in the Food and Drug Administration Adverse Events Reporting System

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Additional Author (s):
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Purpose: Acute kidney injury (AKI) is a common condition associated with both short-term and long-term consequences including dialysis, development of chronic kidney disease, and mortality. Recognition of nephrotoxic medications is necessary to prevent AKI and AKI progression in patients at risk. The Food and Drug Administration Adverse Event Reporting System (FAERS) is a powerful tool to examine drug-associated events; however, no study to date has analyzed FAERS to identify the drugs most frequently reported with AKI. The objective of this study is to classify medications most frequently associated with AKI in FAERS and to identify new potential nephrotoxins for further study.

Methods: The publicly available FAERS database will be queried for reports of AKI. For each adverse event report retrieved, data collected will include patient demographics, drug identity, and adverse event characteristics. Extracted drugs will be assessed for known nephrotoxin status by consulting four authoritative references, and each drug will be classified as a known, potential, non-established, or new potential nephrotoxin. The most frequently reported drugs in each category will be identified, and the reporting odds ratio (ROR) will be calculated for each drug and for each category of drugs. The ROR of each new potential nephrotoxin will be compared with that of known nephrotoxins. Reporting frequencies over time will be examined for medications in each category. For new potential nephrotoxins identified in FAERS, previous literature reports of AKI will be discussed.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-199

Poster Title: Risk factors in patients with thrombotic microangiopathy

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Purpose: Thrombotic microangiopathy (TMA) is a rare disorder after transplantation. TMA comprises a group of disorders including thrombocytopenic purpura, hemolytic uremic syndrome or the combination of two. The clinical course severely deteriorates and often leads to death once TMA occurs. It is a well-recognized complication of the allogeneic hematopoietic stem cell transplantation and renal transplantation. However, published data on risk factors in lung transplant recipients (LTRs) remains limited owing to the rarity in this population. The purpose of this study is to determine the prevalence and ascertain the risk factors for its occurrence that may be of influence on LTR outcome.

Methods: This study is submitted to the Institutional Review Board for approval. Data will be obtained from University of Pittsburgh Medical Center lung transplant database up to September 2016. Adult LTRs (18-80 years old) are included in the study. Patients who are pregnant, prisoners, or age less than 18 years old are excluded from the study, as well as patients with malignancy receiving allogeneic hematopoietic stem cell transplantation, chemotherapy, or radiation. The following data will be collected: Age, gender, race, indications for lung transplant, bilateral or single lung transplant, ADAMTS13 activity testing, platelet counts, haptoglobin level, lactate dehydrogenase, hemoglobin, creatinine, peripheral blood smear, Coombs test, un-conjugated bilirubin, HIV and other viral infections, CMV donor and recipient serotype, aspergillosis infection, and the use of other particular medications (ticlopidine, clopidogrel, quinine, oral contraceptives), systemic rheumatic disorders, pancreatitis, SBP> 160, disseminated intravascular coagulation, and severe vitamin B12 deficiency. Chi-square test or Fischer's exact test will be used for categorical variables. Normality of the data will be assessed with the Shapiro-Wilk test for continuous data. Student's

T test or Wilcoxon's rank-sum test will be used accordingly. Multivariate regression based on demographic variables and/or clinical variables will be used to evaluate the association of risk factors with the development of TMA.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-200

Poster Title: Use of oritavancin in the emergency department as a hospital-avoidance tool in patients with complicated acute bacterial skin and skin structure infections (cABSSSI)

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Purpose: Oritavancin is a newly approved long-acting lipoglycopeptide that can be administered in a single dose when treating complicated acute bacterial skin and skin structure infections (cABSSSI). This dosing strategy creates the opportunity for treating such infections in outpatient settings, such as the emergency department (ED). The primary objective of this quality improvement initiative is to describe the utilization of oritavancin as a hospital-avoidance tool in patients with cABSSSI who present to the ED at a large academic medical center. This project also aims to quantify both hospital reimbursement for the medication and patient out-of-pocket costs.

Methods: A retrospective chart review of patients receiving oritavancin via an outpatient treatment pathway in the emergency department (ED) between June 2016 and March 2017 will be conducted. In order to be included, patients must receive oritavancin for treatment of cellulitis, a wound infection and/or major cutaneous abscess characterized by purulent drainage, erythema, flutuance, localized warmth, edema, pain or tenderness with or without leukocytosis, fever, or swollen lymph nodes. All patients will be evaluated for the presence of any exclusion criteria as outlined in the treatment pathway. The following data will be collected as a part of the retrospective chart review: hospital discharge within the previous 30 days, length of ED visit, time from ED admission to medication order entry, time from medication order entry to administration, 30-day ED visit, 30-day admission, outpatient follow-up and time to follow-up, hospital reimbursement and out-of-pocket cost to the patients. Approval through the quality improvement department will be obtained prior to data collection.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-201

Poster Title: Impact of a geriatric pharmacist's clinical and educational activities during weekly interprofessional team meetings

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Additional Author (s):
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Purpose: The majority of adverse drug events occur in the elderly as a result of physiological changes, multiple co-morbidities, and polypharmacy. Several studies have demonstrated the improvement of medication use as a result of pharmacist-led medication reviews. The primary objective of this study is to describe the clinical interventions of a geriatric pharmacist during weekly interprofessional team meetings via retrospective analysis using a newly developed documentation template. Secondary objectives will be to enumerate the pharmacist's education provided to the interprofessional team. A survey will also be administered to evaluate the team's perception of the pharmacist's effectiveness.

Methods: A retrospective chart review of the patients discussed on team meetings between October 1, 2016 and March 31, 2017 will be conducted. Patient cases are selected by the medical learners due to the complexity of their cases and to enrich interprofessional collaboration and learning between medicine, pharmacy, nursing, social work, nutrition, and physical and occupational therapy. A newly devised pharmacy template will be utilized and recorded in the electronic medical record. This template captures data from the geriatric pharmacist's clinical activities as well as education provided to the patient, patient's family, and team. Clinical activities such as the identification of medication discrepancies and drug-drug interactions, and the provision of recommendations for dosing changes, therapeutic alternatives and cost-savings, will be ascertained. Descriptive analyses will be conducted. Results from the survey will be used to enhance future educational endeavors provided by the pharmacist. Prior to initiation, this study will be submitted for approval by the Institutional Review Board at the University of Pittsburgh.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-202

Poster Title: Pharmacist impact on improving inhaler technique retention in an outpatient primary care setting

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Purpose: Chronic lower respiratory diseases such as Asthma and Chronic Obstructive Pulmonary Disease (COPD) are extremely common and carry with them a high burden of disease. A large percentage of these patients are prescribed inhaled medications to manage their symptoms. Improper inhaler technique can lead to poor patient outcomes resulting in multiple exacerbations, increased hospital admissions and consequently, increased cost to the healthcare system. The primary objective of this study is to determine the effectiveness of pharmacist provided inhaler technique on patient ability to independently and correctly use an inhaler. Other data regarding spacer distribution will also be collected.

Methods: This is a prospective observational study of outpatient adults with asthma and/or COPD presently using or newly prescribed at least one metered dose inhaler medication at study enrollment. Participants will be selected from two primary care clinics, which are both residency practice sites with integrated clinical pharmacists. Appropriate informed consent will be obtained prior to participant enrollment. The clinical pharmacists, pharmacy residents and/or pharmacy students at the specified locations will conduct training sessions as well as follow up between November 2016 and April 2017. Correctness of inhaler technique will be determined using a developed observational checklist at baseline. This will be followed immediately by inhaler education and participant demonstration. Participants who are initially unable to complete defined critical steps will be provided with spacers and subsequent instruction on use. An additional assessment post demonstration and provision of spacer device will be conducted. Information regarding the frequency that patients conducted critical faults resulting in spacer distribution will be reported. Participant's ability to retain information will be evaluated via office appointment or telephone call four weeks after the initial educational

session. Participant's perceived satisfaction with inhaler administration post pharmacist intervention will also be assessed via survey. This study will be submitted to the Institutional Review Board for approval prior to study commencement.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-203

Poster Title: Cost of heparin versus enoxaparin for non–ST-elevation acute coronary syndromes (NSTE-ACS)

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Purpose: Unfractionated heparin (UFH) and low molecular weight heparins, such as enoxaparin, are both used in the initial treatment of NSTE-ACS. The ACC/AHA Guideline for the Management of Patients with NSTE-ACS recommends enoxaparin over unfractionated heparin. Because the initial drug cost of UFH is less expensive than enoxaparin, it is often preferred in the hospital even though its use is associated with more secondary costs including laboratory monitoring, infusion supplies and additional nursing time. With the recent approval of the first generic enoxaparin, an evaluation of direct and indirect costs is warranted.

Methods: This study is a retrospective chart review of adult inpatients who were initiated on WellSpan York Hospital's Heparin Cardiac Nomogram from July 1, 2016 through September 30, 2016. Adult patients over 18 years of age who were admitted for medical management of NSTE-ACS and started on the Heparin Cardiac Nomogram within 24 hours of presentation will be included in the analysis. Patients admitted to an intensive care unit, who received percutaneous intervention (PCI) or who have end-stage renal disease will be excluded. The cost of treatment with UFH will include the drug procurement cost, laboratory cost of the activated partial thromboplastin time (aPTT), and an estimate of the nursing time required for initiation and rate adjustments per nursing policy. The cost of UFH will not include the infusion pump or the infusion lines. The cost of treatment with enoxaparin will only include the cost of the drug itself as it does not require laboratory monitoring. From the results of this study, the direct and indirect costs of UFH when used for NSTE-ACS will be determined. The potential cost difference will be evaluated if patients are transitioned to the ACC/AHA guideline recommendation of enoxaparin at this institution.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-204

Poster Title: Evaluation of naloxone use at a community teaching hospital

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Purpose: Naloxone is an opioid receptor antagonist indicated for reversal of opioid-induced respiratory depression. Hospitalized patients receive opioids for acute and chronic indications and inappropriate naloxone administration may increase discomfort and/or precipitate opioid withdrawal. At WellSpan York Hospital, naloxone is administered following a provider's order or a nurse-driven protocol for opioid-induced respiratory depression. The primary objective of this study is to identify the appropriateness of the naloxone administration, defined as a respiratory rate less than 8 breaths per minute, prior to naloxone administration. Secondary objectives will assess resolution of respiratory depression and reported pain scores after naloxone administration.

Methods: This study is an IRB-exempt retrospective chart review of patients at WellSpan York Hospital charged for naloxone between August 2015 and July 2016. These patient will be identified using the electronic medical record. Admitted adult patients administered naloxone for reversal of suspected opioid toxicity will be included. Patients will be excluded if naloxone was received for indications other than opioid reversal, were receiving methadone, or received naloxone in the emergency department or post-anesthesia care unit.
The following patient demographic data will be collected confidentially and without patient identifiers: age, sex, weight, opioid history prior to admission, total opioids received in previous twenty-four hours converted to oral morphine milligram equivalents, location of patient and admitting service. The following data will also be collected: the dose and route of naloxone administered, the respiratory rate prior to and following the naloxone, the pain score before and after naloxone administration, the last opioid dose and route of administration, whether the opioid was scheduled or as needed. The initiating opioid order characteristics will be collected including if this order was initiated via a protocol and by a medicine or surgery provider.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-205

Poster Title: Evaluating the use of dexmedetomidine to facilitate non-invasive ventilation (NIV) in progressive care units and intensive care units.

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Purpose: Non-invasive ventilation (NIV) is becoming more utilized for managing acute respiratory failure. NIV is associated with fewer complications than endotracheal intubation but patient compliance can be challenging. Commonly used agents for anxiety in this setting include benzodiazepines and opiates. These are associated with adverse events such as respiratory depression, hypotension, and excessive sedation. Dexmedetomidine exerts its effects through agonism of the alpha-2 adrenergic receptor. Unlike other sedatives, dexmedetomidine has sedative and anxiolytic properties without causing significant respiratory depression. This study aims to evaluate the efficacy and safety of dexmedetomidine for sedation in patients that require NIV.

Methods: All patients 18 years old or older, located in a progressive care unit (PCU) or intensive care unit (ICU), on NIV, and requiring dexmedetomidine will be included in this study. Dexmedetomidine use in these patients will be initiated and guided through a hospital approved protocol. Patients that are located in a PCU or ICU and on dexmedetomidine will be identified through a daily drug utilization report. Clinical pharmacists will determine the patients that meet the inclusion criteria through investigation of the EMR, paper-chart, and speaking with nurses/physicians caring for these patients.

Results: n/a

Conclusion: n/a

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-206

Poster Title: Evaluation of Adjunct Dexmedetomidine in Benzodiazepine-Resistant Patients Exhibiting Alcohol Withdrawal Inpatient

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Purpose: An estimated 17 million Americans have an alcohol use disorder. The risk of alcohol withdrawal syndrome (AWS) during acute care admissions is significant. Benzodiazepines (BZDs) provide inhibitory activity post alcohol discontinuation in AWS, however, BZD-resistance secondary to GABA receptor downregulation and conformation may develop. Dexmedetomidine (DEX) is an alpha-2-agonist, producing sedative and sympatholytic effects. DEX does not provide seizure control; however, it may have an adjunct role in reducing BZD use and resistance. The purpose of this analysis is to determine the efficacy and safety of adjunct dexmedetomidine for BZD-resistant patients in Progressive Care or Intensive Care Units exhibiting AWS.

Methods: This is a prospective observational study. For the purpose of this study, BZD resistant is defined as a Modified Severity Assessment Scale (MSAS) > 10 requiring scheduled lorazepam plus two consecutive PRN lorazepam doses or MSAS > 15. Patients will be included in this analysis if they have been diagnosed with alcohol withdrawal syndrome, transferred to an Intensive Care Unit (ICU) or Progressive Care Unit (PCU), and either meet the requirements for BZD resistance or have been initiated on DEX by an intensivist or pulmonologist. Patients will be excluded if they are less than 18 years of age, have been administered BZDs for purposes other than AWS, have had adverse reactions or have contraindications to DEX including: hypersensitivity, active myocardial ischemia, second-or third-degree heart block, hepatic impairment, severe ventricular dysfunction, pregnancy, bradycardia or hypotension. Primary endpoints will be the difference in MSAS scores prior to and post initiation of DEX and the number of patients transferred to the ICU. Secondary endpoints include ICU/PCU LOS and

hospital LOS. Secondary safety endpoints for DEX include maximum dose required to achieve a goal RASS score, hypotension (systolic blood pressure [SBP] < 90) and bradycardia (heart rate < 50 bpm). Secondary safety endpoints for BZDs include total daily dose of lorazepam prior to and post DEX initiation, administration of flumazenil, number of patients requiring intubation, and seizures.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-207

Poster Title: Practice change from intermittent medication boluses to bolusing from a drip in pediatric critical care: a quality improvement project

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Purpose: Intermittent IV medications may be administered either as an individual dose, obtained from a pharmacy or an automated dispensing machine on the unit, or as a bolus from a drip if that same medication is being continuously infused (bolus from drip method). Bolus from drip method is standard of practice in many children's hospitals across the country. MUSC Children's Hospital implemented a practice change to bolus from drip in November 2015. The objective of this study is to determine the impact of this method on the quality of patient care and safety in pediatric intensive care units.

Methods: This study is evaluating patients < 18 years old in the MUSC pediatric cardiac and medical intensive care units receiving continuous infusions of midazolam, fentanyl, morphine, vecuronium, rocuronium, dexmedetomidine, pentobarbital, or cisatracurium between 5/1/2015 and 5/31/2016, with November being a washout period. The following was evaluated for patients receiving these drips: time between medication bolus need being identified to time to beginning of bolus administration, central line entries, nursing satisfaction, cost savings, unplanned extubations, patient safety events, and Alaris™ pump guardrail overrides. The time (seconds) between the point in which a bolus medication dose was deemed necessary by a bedside nurse until the medication administration began was collected by a group of volunteers and nurses. Central line entries were collected by nurses each time they accessed a patient's line before and after the implementation of the bolus from drip method. A nursing satisfaction survey was administered before and after the process change. Cost savings are being evaluated through a retrospective chart review of the number of intermittent doses given from an automated dispensing machine (ADM) prior to the new process compared with the number

given as a bolus from a continuous infusion plus from an ADM after implementation. The data for unplanned extubations, patient safety events, and Alaris™ pump guardrail overrides were collected from an outside source and evaluated by reviewers.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-208

Poster Title: Incidence of hypoglycemia in patients with renal dysfunction treated for hyperkalemia with regular insulin

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Purpose: Patients with hyperkalemia are often treated with regular insulin and dextrose to rapidly shift potassium intracellularly. While insulin has been shown to be an effective short-term therapeutic option, previous observational studies have reported increased hypoglycemic events in patients with end stage renal disease (ESRD) treated with insulin for hyperkalemia. Healthcare professionals at the Medical University of South Carolina (MUSC) treating such patients have made similar observations. This study aims to determine the incidence and risk factors for the development of hypoglycemia at MUSC in patients with chronic kidney disease (CKD) stages III-V or on dialysis with hyperkalemia treated with insulin.

Methods: A report was generated from the electronic health record of all patients with CKD stages III-V or on dialysis with a potassium level greater than 5.5 mg/dL treated with regular insulin. Patients treated between October 1st, 2015 and August 16th, 2016 were included in the analysis. The following data was collected: age, race, sex, body mass index, history of diabetes or oral antihyperglycemic medications, stage of CKD, inciting potassium level and time, regular insulin dose and time, blood glucose levels and time, and time to hypoglycemia. Exclusion criteria included patients less than 18 years old, those without a blood glucose reading within 24 hours before insulin administration, without a blood glucose reading within 24 hours after insulin administration, or blood glucose less than 70 mg/dL before insulin administration. Hypoglycemia was defined as blood glucose less than 70 mg/dL and severe hypoglycemia was defined as blood glucose less than 50 mg/dL. The primary outcome was incidence of hypoglycemia in patients with renal dysfunction that receive regular insulin. Secondary

outcomes included incidence of severe hypoglycemia, assessment of average time to onset of hypoglycemia, and identification of risk factors associated with hypoglycemia. Risk factor analysis included stratification by age, sex, race, diabetes history, body mass index, CKD stage, insulin dose, and initial blood glucose.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-209

Poster Title: Implementation of pharmacogenetics service in an adult oncology outpatient chemotherapy infusion center.

Primary Author: Glenn Roma, Baptist Cancer Center, TN; **Email:** gwroma@gmail.com

Additional Author (s):
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Purpose: Both efficacy and toxicity of medication therapy varies among patients, largely due to genetic differences in the drug metabolizing enzymes and pathways. Identifying patients with these differences will provided safer and more effective therapy.
Main objective: Identify patients at risk for increase adverse drug events (ADE) based upon pharmacogenetic testing, and provide drug specific recommendations to minimize ADEs.
Primary objective: Demonstrate decrease in chemotherapy related ADEs in patients receiving fluoropyrimidine-based chemotherapy using preemptive dihydropyrimidine-dehydrogenase (DPD) test results to guide initial dosing recommendations. Secondary objective: Provide medication therapy management services using pharmacogenetics testing results for non-antineoplastic medication therapies patients are prescribed.

Methods: Prior to the initiation of chemotherapy, 60 oncology patients prescribed fluoropyrimidine therapy will be consented for pharmacogenetics testing. The testing procedure includes an initial pharmacist-patient interaction to discuss the purpose of the testing and to perform an initial medication history evaluation. Buccal swabs will be collected and submitted for analysis of approximately 50 different drug metabolizing genes, including DPD. Based upon the results of the DPD genotyping, dosage recommendations will be made regarding the fluoropyrimidine portion of therapy. Recommendations for initial dosing will follow those proposed in by the Clinical Pharmacogenetics Implementation Consortium (CPIC) guidelines. Further dose adjustments will be made on a patient by patient basis secondary to tolerance of therapy. Rates and severity of adverse effects among the patients will be compared to historic rates among patients receiving fluoropyrimidine therapy between January 1, 2015 and December 31, 2015 based on chart review from the electronic health record, evaluating severity and frequency of ADRs, need for dose adjustments based on toxicities, and hospitalizations related to chemotherapy toxicity. Additionally, the pharmacist will evaluate the

patient's pharmacogenetics results and the current medications to determine any other potential therapeutic concerns.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-210

Poster Title: Evaluation of peri-operative bleeding and thrombosis in LVAD patients

Primary Author: Megan Gregory, Baptist Memorial Hospital - Memphis, TN; **Email:** gregorymegan59@gmail.com

Additional Author (s):
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Purpose: In patients with heart failure and severely impaired ejection fraction, placement of a left ventricular assist device (LVAD) is often necessary. For patients receiving an LVAD, there is an increased risk of both thrombosis and bleeding. Studies evaluating the long-term risks of thromboembolism and bleeding have been previously published, but information on the peri-operative period is lacking. Therefore, the purpose of this study is to determine what factors may be associated with bleeding and/or thrombosis in the peri-operative period of LVAD placement.

Methods: This retrospective chart review was approved by the Baptist Memorial – Memphis Institutional Review Board. Patients 18 years of age or older who were admitted between March 1, 2014 and August 31, 2016 for LVAD placement will be included. The primary outcome is the incidence of thrombosis or clinically significant bleeding from time of admission to discharge. Key secondary endpoints include incidence of venous thromboembolism, ischemic stroke, hemorrhagic stroke, and in-hospital mortality. Data on the following patient characteristics will also be collected: blood pressure, body mass index (BMI), pre-operative antithrombotics and post-operative anticoagulation, type of LVAD placed, purpose and urgency of LVAD placement, length of stay from LVAD placement to discharge, and coagulation studies. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-211

Poster Title: Correlation of inappropriately dosed direct oral anticoagulants and incidence of readmissions due to thromboembolism or bleeding in atrial fibrillation patients

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Additional Author (s):
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Purpose: Antithrombotic therapy is indicated for stroke prevention in patients with atrial fibrillation. Prescribing direct oral anticoagulants (DOACs) has increased due to limited monitoring, fewer drug/food interactions and support from recent national guidelines versus warfarin. Inappropriate doses, both above and below FDA approved doses, are being seen commonly in practice. Although current literature has studied the prevalence of inappropriate dosing, the outcomes associated with this trend are still unknown. The purpose of this study is to investigate the incidence of thromboembolism or bleeding in patients with atrial fibrillation who were discharged on recommended versus inappropriate doses of DOACs.

Methods: This single-center, retrospective chart review study was approved by Baptist Memorial Hospital Institutional Review Board. Data will be collected through the electronic medical record system for patients discharged on a direct oral anticoagulant from March 2014 to August 2016 for the indication of atrial fibrillation. The primary outcome is to identify and compare the prevalence of hospital readmissions due to venous thromboembolism, stroke, or bleeding in patients who were previously discharged on an appropriate versus inappropriate dose of DOAC. Demographic data as well as admission diagnosis, major surgeries during hospitalization, past medical history, and concomitant medications will be collected. Lab values including complete blood count and comprehensive metabolic panel will also be used to assess dose appropriateness. DOAC doses will be evaluated based on the manufacturer recommended dosages for patients with atrial fibrillation. Readmission diagnosis and the DOAC dose from the previous admission will be collected to assess for any correlation.

Results: TBD

Conclusion: TBD

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-212

Poster Title: Evaluation of prophylactic anticoagulation in hospital-acquired venous thromboembolism, stratified by body mass index

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Additional Author (s):
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Amy Brewster

Purpose: Venous thromboembolism (VTE), which includes deep vein thrombosis (DVT) and pulmonary embolism (PE), contributes to approximately 200,000 deaths per year. Obesity has been identified as an independent risk factor for the development of VTE. Identification of an appropriate VTE prophylactic dose is necessary to reduce the risk of thrombosis in this population. The purpose of this study is to evaluate the use of prophylactic anticoagulation in hospital-acquired VTE, stratified by BMI, in order to assess if obese patients are at a higher risk of acquiring VTE during their hospital stay compared to non-obese patients.

Methods: This study is a single-center, retrospective chart review of patients admitted to Baptist Memorial Hospital – Memphis (BMHM) from March 11th 2014 to August 31st 2016 with a hospital-acquired VTE diagnosis. Patients were identified by ICD-9 and ICD-10 codes using the electronic medical records. The primary outcome of this study is the incidence of hospital-acquired VTE in non-obese vs. obese patients, defined as a BMI greater than 30 kg/m2. The secondary endpoints are to identify length of stay and bleeding risk, and to stratify incidence of VTE by BMI and VTE prophylactic therapy received. This study has been approved by the BMHM International Review Board (IRB). Patients were excluded if they had an admitting diagnosis of VTE or required a treatment dose of anticoagulation prior to admission. The following data will be collected: patient demographics (age, sex, race, weight, height, BMI), heparin allergy, inpatient VTE prophylaxis received (drug, dose), the day of hospital stay the VTE was identified, total length of hospital stay, a drop in hemoglobin greater than 2 g/dL during hospital admission, and hormone replacement therapy. A history of heart failure, liver failure, renal failure, cancer, or VTE will also be collected.

Results: TBD

Conclusion: TBD

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 8-213

Poster Title: Evaluation of pain management in abdominal surgery patients

Primary Author: Ariel Dye, Baptist Memorial Hospital - Memphis, TN; **Email:** ariel.dye@bmhcc.org

Additional Author (s):
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Purpose: Pain management is an important component in the care of surgical patients. Despite improvements in surgical pain control, many patients still experience postoperative pain. The traditional approach to pain control has been largely opioid-based despite their broad range of undesirable side effects. Studies evaluating multimodal pain management have shown benefits including superior pain control, decreased opioid requirements, fewer adverse effects, and shorter inpatient length of stay. The purpose of this study is to evaluate the status of post-surgical pain management at this institution by assessing the current techniques used.

Methods: This retrospective chart review has been approved by the Baptist Memorial Hospital – Memphis (BMHM) Institutional Review Board. Patients greater than 18 years of age who underwent either gastric abdominal or colon surgery at BMHM between September 1, 2014 and August 31, 2016 will be eligible for inclusion. Exclusion criteria include length of stay less than 24 hours post-surgery, history of drug or alcohol abuse, chronic opioid use at the time of surgery, and/or oncology patients. The primary outcome will evaluate 24-hour post-surgery opioid use. Secondary outcomes will include 24-hour post-operative pain scores, opioid-related side effects (nausea, vomiting, constipation), and length of stay. Data on the following patient characteristics will also be collected: pre, intra, and post-operative pain medications administered (NSAIDs, acetaminophen, gabapentin, and pregabalin), serum creatinine, and creatinine clearance. All data will be recorded without patient identifiers and maintained confidentially.

Results: TBD

Conclusion: TBD

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 8-214

Poster Title: USP 800 Implementation in a community hospital

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Purpose: Hazardous drugs (HDs) affect many workers in healthcare. According to the Centers for Disease Control, each year approximately 8 million U.S. Healthcare workers are potentially exposed to HDs. The United States Pharmacopeia has finalized a new chapter to the National Formulary titled USP 800 Hazardous Drugs–Handling in Healthcare Settings. This chapter expands on the current 795 & 797 nonsterile & sterile compounding chapters with importance on ensuring hazardous drug exposure at as low a level as reasonably achievable. This implementation project aims to address all elements of USP 800 for safety and quality improvement at Baptist Memorial Hospital – Memphis.

Methods: This implementation project will begin with the identification and mapping of hazardous drugs (HDs) within Baptist Memorial Hospital – Memphis (BMH-M) based on the 2014 National Institute of Occupational Safety and Health (NIOSH) list. Once identified, requirements for receiving, storing, mixing, preparing, compounding, dispensing, administering, transporting, and disposing will be addressed for each medication. Also included will be creation of new policies and procedures, risk assessments, employee medical surveillance, and house-wide education modules. Annual education will include pharmacy, nursing, environmental services, transport, and maintenance, as these departments all may have contact with HDs. Once implementation is complete, assessment of knowledge will be gained using education modules within internal HealthStream system. This module will include a PowerPoint self-learning section followed by questionnaire. To complete the competency an 85% score will be required. The primary objective of this project is comprehensive implementation of all elements required by USP 800 Hazardous Drug standards to ensure patient safety, worker safety, and environmental protection.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-215

Poster Title: The Effect of Statin Therapy on Postoperative Atrial Fibrillation

Primary Author: Kelly Imarhia, Baptist Memorial Hospital-Memphis, TN; **Email:** kelly.imarhia@bmhcc.org

Additional Author (s):
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Purpose: Atrial fibrillation (AF) is an important and common complication following cardiac surgery. The incidence of postoperative atrial fibrillation (POAF) is approximately 30% following isolated coronary artery bypass graft (CABG) surgery, 40% after isolated valvular surgery, and 60% in combined CABG and valvular surgery. Increasing evidence suggest inflammation and oxidative stress may play a key role in the development of POAF. Statins have been studied for the prevention of the incidence of POAF with conflicting results. The aim of this study is to evaluate the effect of preoperative statin therapy on the incidence of POAF in patients who undergone cardiothoracic surgery.

Methods: This study is a retrospective analysis of computerized medical records of patients at Baptist Memorial Hospital – Memphis who underwent cardiothoracic surgery. ICD 9/10 diagnostic codes were used to identify patients who have undergone cardiac surgeries. Patients were included if they were greater than 18 years old and had undergone a CABG aortic valve replacement (AVR), mitral valve replacement (MVR) or combination of CABG and AVR between August 1, 2015 and August 31, 2016. Patients with a history of AF or prior cardiothoracic surgery were excluded. The primary outcome is the incidence of POAF following cardiac surgery documented within 5 days postoperatively. The secondary outcomes are the composite of myocardial infarction, ischemic stroke, length of hospital stay, length of ICU stay, and mortality 30 days postoperatively. Data collected will include patient demographics, past medical history, preoperative and postoperative medications, type of cardiac procedure, ICU length of stay, and hospital length of stay.

Results: TBD

Conclusion: TBD

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Descriptive Report

Session-Board Number: 8-216

Poster Title: Evaluating inpatient usage of intravenous immune globulin at a large tertiary hospital

Primary Author: Gregory Kelly, Baptist Memorial Hospital-Memphis, TN; **Email:** gregoryfkelly@outlook.com

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Purpose: Intravenous immune globulin (IVIG) has been studied as a treatment option for various medical conditions. IVIG therapy may be considered for use in acute and chronic conditions. It is safely administered in inpatient and outpatient settings. Because of the high cost and limited availability associated with the procurement of IVIG, unnecessary use of IVIG is discouraged. Additionally, differences in medication reimbursement between inpatient and outpatient settings encourage administration of IVIG outpatient when appropriate. This project evaluates the appropriateness of inpatient IVIG usage at a large tertiary hospital with emphasis on identifying opportunities to relocate administration from inpatient to outpatient settings.

Methods: To assess the appropriateness of inpatient usage, IVIG orders from January 1 to March 31, 2016 were reviewed. Information regarding each IVIG order was extracted from the medical record to a standardized de-identified data collection sheet. To identify trends of usage within the hospital, ordering provider, location of use, as well as IVIG dosing were recorded. In order to assess necessity of inpatient administration, reason for admission, and indication for use were noted. Lastly, to consider the ability to relocate administration to outpatient settings, length of stay and proximity of IVIG administration to discharge were recorded. Using the collected information, each order of IVIG was evaluated for appropriateness with additional consideration given to patient clinical status at the time of IVIG administration.

Results: A total of 3517 grams of IVIG were ordered between January 1 and March 31, 2016. Of the 3517 grams, 1489 grams (43%) were administered inpatient and 2028 grams (57%) were administered outpatient. Inpatient orders were associated with 38 unique patient admissions and 22 ordering providers. IVIG was used primarily on medical oncology (28%) and myelosuppression (22%) units, with frequent use seen on internal medicine (13%), medial

intensive care (9%), and neurology units (7%). The most common indications for inpatient IVIG usage were: severe thrombocytopenia (24%), myelodysplastic syndromes (21%), chronic inflammatory demyelinating neuropathy (16%), myasthenia gravis exacerbation (13%), chemotherapy induced myelosuppression (11%), and hematopoietic stem cell transplant (11%). Of the 38 unique patient admissions, IVIG orders in 6 encounters were identified as potentially inappropriate (16%). Potentially inappropriate uses accounted for 975 grams (66%) of the 1489 grams of IVIG used between January 1 and March 31, 2016.

Conclusion: Administration of IVIG for chronic conditions such as stable chronic inflammatory demyelinating neuropathy and stable myasthenia gravis comprised the majority of inappropriate usage. In addition to administration for stable conditions, multiple instances of prolonged length of stay were observed in patients identified as ready for hospital discharge who remained inpatient to receive IVIG. A secondary finding of wide variations in IVIG dosing was observed between patients and indications. IVIG dosing also varied within indications with dosing varying from 0.4 gram per kilogram to 0.7 gram per kilogram and treatment durations from 3 to 7 days for the same indication.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-217

Poster Title: Fluoroquinolone use in hospital-acquired pneumonia (HAP), healthcare-associated pneumonia (HCAP) and ventilator- associated pneumonia (VAP).

Primary Author: Benjamin Afoakwa, Baptist Memorial Hospital-Memphis, TN; **Email:** bafoakw1@gmail.com

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Purpose: Empiric dual antipseudomonal therapy is a guideline recommendation for treatment of HAP/VAP in critically ill patients with risk factors for Pseudomonas aeruginosa. Guidelines also recommend taking local resistance into account when selecting a second agent. In November 2015, the Antimicrobial Stewardship Program (ASP) developed a combination antibiogram of beta-lactam resistant Pseudomonas isolates that found 13 percent sensitivity to levofloxacin versus 87 percent sensitivity to tobramycin. The ASP created a guideline describing when and which agents to use for dual Pseudomonas coverage for the treatment of HAP/HCAP/VAP. This retrospective cohort study aims to illustrate the impact of this protocol at BMH-Memphis.

Methods: This is a single center, retrospective study evaluating patients admitted to the BMH-Memphis medical intensive care unit (MICU) and surgical intensive care unit (SICU) who had a diagnosis related group (DRG) code for HAP, HCAP, or VAP from the period of 8/1/2014 through 8/31/2016. To achieve a power of 80 percent, 150 participants will be included in this study with 75 each in the pre and post implementation cohorts. The primary objective of this study is to compare levofloxacin days of therapy per 1000 patient days (DOT/1000 patient days) before and after implementation of the dual Pseudomonas antibiogram guideline at BMH-Memphis in patients diagnosed with HAP, HCAP, or VAP. Secondary objectives will include a comparison of the percentage of patients who received dual Pseudomonas coverage, 90 day Clostridium difficile rates, hospital length of stay, ICU length of stay, 30 day mortality, 30 day readmission rates, 90 day incidence of multi drug resistant organisms, and adverse events pre and post implementation of the guideline.

Results: NA

Conclusion: NA

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-218

Poster Title: Clinical outcomes of mechanically ventilated patients based on choice of sedative

Primary Author: Bhavyata Parag, Baptist Memorial Hospital-Memphis, TN, TN; **Email:** bhavyata.parag@bmhcc.org

Additional Author (s):
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Purpose: The Society of Critical Care Medicine guidelines for management of pain, agitation, and delirium in the intensive care unit (2013) recommend the use of an analgosedation approach for the management of mechanically ventilated (MV) patients. Pain management and choice of pain and sedation agents in critically ill, MV patients has been shown to impact time on MV, incidence of delirium, length of intensive care unit (ICU) stay and length of hospital stay. The purpose of this study is to evaluate current sedation management in a medical ICU (MICU).

Methods: After obtaining approval from the Institutional Review Board (IRB), patients were identified as those who were MV in the MICU for greater than 24 hours. Patients were included if they received either continuous sedation with a benzodiazepine (midazolam or lorazepam), propofol, or dexmedetomidine or no sedation for greater than or equal to 80 percent of time while MV. Patients were excluded if they had a diagnosis of a neurologic disorder (traumatic brain injury, seizures or cerebrovascular accident) or acute respiratory distress syndrome, patients who transitioned to hospice or comfort care and pregnant or breastfeeding women. Baseline characteristics included age, weight, gender and significant past medical history (COPD, asthma, chronic opioid use, chronic alcohol consumption). Data collection included ICU and hospital length of stay, time on MV and sedation and analgesic agents utilized. The remaining data collected included Confusion Assessment Method for the ICU (CAM-ICU) scores, Richmond Agitation Sedation Score (RASS) scores, and the percent of time Critical Care Pain Observation Tool (CCPOT) scores were greater than or equal to 3 and treated.

Results: TBD

Conclusion: TBD

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-219

Poster Title: Pilot study to investigate cardiovascular adverse effects of a class of pain relievers

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Purpose: Nonsteroidal anti-inflammatory drugs (NSAIDs) are frequently prescribed for patients with arthritis. Research has demonstrated NSAIDs are associated with renal effects, including reduced sodium excretion, and higher rates of cardiovascular (CV) and cerebrovascular events. The goal of this study is to determine whether the degree of cardiorenal effects associated with the use of NSAIDs correlates with drug plasma levels.

Methods: This study will be reviewed by the local institutional review board. Four groups of six patients with osteoarthritis between ages 50 to 65, on total daily doses of celecoxib 200 mg, meloxicam 15 mg, naproxen 1,000-1,100 mg or placebo for at least one month will be included. Exclusion criteria are: KDOQI stage 3b, 4 or 5 renal failure, Child Pugh class B, C, or D liver failure, heart failure, stroke, myocardial infarction, or cardiac event within three months, patients taking: as needed NSAID, angiotensin converting enzyme inhibitors, angiotensin receptor blockers, any diuretics, immunosuppressant therapy, aspirin containing analgesics, any medication that may affect renal function at the discretion of two investigators and the more than two doses of over-the-counter or prescription NSAID within the previous two weeks or one dose within the previous 48 hours. Blood and urine samples will be collected. The following will be recorded: blood pressure; weight; plasma concentration of the NSAID; serum concentrations of potassium, sodium, creatinine, blood urea nitrogen, C-reactive protein, fibrinogen, troponin-T, n-terminal pro-brain natriuretic peptide, homocysteine, fasting lipid profile; and a 24-hour urine sample to measure the concentrations of sodium, potassium, creatinine, and urea. Data comparisons will be made among the groups with a two-way ANOVA

and linear regression analyses will be performed to examine the relationship between parameters.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-220

Poster Title: Creation, evaluation, and implementation of a chemotherapy order review guide for use at a community hospital

Primary Author: Alexandra Punke, Blount Memorial Hospital, TN; **Email:** apunke@uthsc.edu

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Purpose: The proper evaluation of chemotherapy orders is necessary to ensure the safety and appropriate treatment of patients with cancer. A board certified oncology pharmacist is employed through a clinical services contract but is not always present to evaluate chemotherapy orders. While various policies have been adopted by the pharmacy department in an attempt to meet the need of chemotherapy order evaluation guidance, the topic evades capture in a policy because it is too broad in scope and depth. The primary objective is to create a step-by-step chemotherapy order evaluation guide and provide a detailed explanation for each step.

Methods: A step-by-step, one-page chemotherapy order evaluation guide with reference tables will be created based on an accepted method of chemotherapy order review consisting of the following eight steps: regimen verification, protocol verification, BSA calculation, dose calculation, laboratory values, emesis prophylaxis, adjunctive or supportive care drugs, and pharmacy labels. The intent of this guide is to provide non-oncology trained pharmacists with a concise, systematic process to be able to independently and efficiently review chemotherapy orders. A literature search will be performed for each of these eight steps, and the information will be compiled into a literature review providing a comprehensive explanation for each step. This component will serve as a resource to advance the understanding of chemotherapy principles beyond the step-by-step order review guide as time permits. The chemotherapy order evaluation guide will be tested on pharmacists without oncology training or experience using simulated chemotherapy orders. The effectiveness of the guide will be determined by

examining the pharmacists' ability to correctly verify chemotherapy orders and the length of time required to do so. Provided the guide is effective, a policy will be written and presented to the appropriate committees for approval to implement the chemotherapy guide. The guide would then be required to be used by pharmacists during evaluation of every chemotherapy order regardless of indication.

Results: NA (Research in progress)

Conclusion: NA (Research in progress)

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-221

Poster Title: Cockcroft-Gault equation accuracy compared to measured creatinine clearance in special patient populations

Primary Author: Meghan Garrett, Blount Memorial Hospital, TN; **Email:** meghanjgarrett@gmail.com

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Purpose: Studies have conflicting results regarding which body weight should be used in Cockcroft-Gault to best correlate with measured creatinine clearance (mCrCl) in obese patients. Similar discrepancies exist for using actual serum creatinine (SCr) or a rounded value in elderly and other patients with low SCr. Due to variability seen in the literature, there is a need to develop a standardized weight and SCr for CrCl estimate in the Cockcroft-Gault equation in these populations.The goal of this research is to determine which body weight and SCr best approximates mCrCl in special patient populations and to provide the best dosing recommendations.

Methods: Electronic medical records at a community hospital will be retrospectively reviewed for patients who had a 24-hour urine collection with mCrCl. Information to be collected includes: age, race, sex, height, weight, mCrCl, SCr, and past medical history (diabetes mellitus, nephrectomy, renal transplant, chronic kidney disease). This information will be used to perform up to thirteen Cockcroft-Gault calculations using four possible body weights (actual body weight [ABW], ideal body weight [IBW], 30% adjusted body weight and 40% adjusted body weight), three possible SCr values (actual SCr, SCr round to 0.8 and 1), and an equation without body weight. The estimated CrCl values obtained from the above calculations will be compared to mCrCl. A ranked list will determine which variables best approximate mCrCl. Metrics include ranking the weight of obese patients (greater than or equal to 120 % of IBW) in the order that most accurately correlates with the mCrCl. In patients with SCr less than or equal to 0.79 mg/dL, determine if rounding the SCr to 0.8 mg/dL or 1.0 mg/dL is more likely to

correlate with a mCrCl. In elderly patients (greater than or equal to 65 years of age), determine which weight and SCr is most likely to correlate with a mCrCl.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-222

Poster Title: Evaluation of sedation analgesia in rapid sequence intubation in a community hospital

Primary Author: Amanda Barnett, Blount Memorial Hospital, TN; **Email:** kacee.barnett@gmail.com

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Purpose: The purpose of this study is to evaluate the use of sedation and analgesia in rapid sequence intubation (RSI) at a community hosptial. After an initial review, an education plan will be created to target physicians and nurses who are involved in RSI. A follow up review will be completed to assess for improvement. We will also be looking at the incidence of adverse effects related to inadequate sedation. In addition to evaluating the medication use, this study will look at the impact of pharmacist involvement during RSI.

Methods: Patients will be identified using RSI charge sheets between May 2016 and July 2016 for the pre-education phase, and Novemeber 2016 and January 2017 for the post-education phase. Information will then be gathered using the electonic medical record. The primary objectives are to assess whether or not patients are receiving adequate analgesia and sedation after RSI per the PAD guidelines, to determine the incidence of adverse effects related to inadequate analgesia and sedation, and to determine the impact of ED targeted education on post-intubation compliance. Secondary objectives are to determine whether or not pharmacist involvement during RSI impacts the time until post-intubation medications and to determine if physicians are using the sedation order set. Patients who are intubated outside the hospital, patients undergoing conscious or procedural sedation, and patients who died prior to administration of post-intubation medications will be excluded from this study.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-223

Poster Title: Breathing better: Assessing the impact of a breathing care team on 30-day readmissions

Primary Author: Daniel Rose, Bristol Regional Medical Center, TN; **Email:** daniel.rose@wellmont.org

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Abby Ricket

Purpose: Patients with COPD or pneumonia are at high risk for readmissions within 30 days of initial hospital discharge. This study will evaluate the impact of a breathing care team (including a respiratory therapist and pharmacist) on the number of 30 day all-cause readmissions.

Methods: Patients with traditional Medicare admitted to Bristol Regional Medical Center with a primary diagnosis of COPD or pneumonia will receive disease state education from a respiratory therapist (RT), discharge counseling from a pharmacist, and follow-up phone calls post-discharge day 3, 7, 14, and 21. Readmission rates in the study group will be compared to historical data. Information collected during the study will include: patient age, gender, ethnicity, number of chronic conditions, ICU transfer during admission, health literacy using the BRIEF assessment, number of medications at admission and discharge, time to first prescription fill, length of stay, and time spent per patient. Patients ineligible for the study include those discharged to a location other than home, hospice and palliative care patients, patients who are pregnant, non-English speaking patients, and patients with cognitive impairment.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-224

Poster Title: Evaluation of penicillin allergy documentation and the effect of a penicillin allergy guideline on antibiotic selection

Primary Author: Hunter Perrin, Bristol Regional Medical Center, TN; **Email:** hunter.perrin@wellmont.org

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Purpose: Patients with a documented penicillin allergy often receive alternative antimicrobials that are not considered first line agents. The literature suggests that significant allergic reactions to penicillin, as well as, the rates of cross reactivity among beta-lactam agents, are lower than expected. Negative patient and economic outcomes occur with the avoidance of penicillins in this patient population. The objective of this study is to determine whether complete penicillin allergy documentation and utilization of a penicillin allergy guideline will result in improved antibiotic selection and economic outcomes.

Methods: The antimicrobial stewardship team for this study will consist of the pharmacy resident, the infectious disease pharmacist, and an inpatient clinical pharmacist. The retrospective portion of the study will utilize the electronic medical record to identify patients with a documented penicillin allergy and an ordered antibiotic from November 2015 through January 2016. In these pre-intervention patients the following will be measured: the extent of penicillin allergy documentation, the antimicrobial agent(s) selected, and the average dollar cost per day of antibiotics. The prospective portion of the study will take place from November 2016 through January 2017 with the implementation of a penicillin allergy assessment questionnaire and a penicillin allergy guideline. The antimicrobial stewardship team will run a report using the electronic medical record Monday through Friday to identify patients with a documented penicillin allergy that have been ordered antibiotics. These patients will then be interviewed through the use of a standardized penicillin allergy assessment questionnaire. Patients' allergy profiles will be updated based on this comprehensive assessment. Antibiotic selection for each patient will then be assessed through the use of a penicillin allergy guideline. If a patient is on an alternative antibiotic and a beta-lactam agent appears safe for use, the

prescriber will be contacted to discuss antibiotics and allergy assessment. Antimicrobial expenditures in these patients will be evaluated in these patients during their hospital stay.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-225

Poster Title: Pharmacist-led intervention to prevent hospital admissions for stable venous thromboembolism from the emergency department

Primary Author: Justin Reinert, CHI Memorial, TN; **Email:** justin_reinert@memorial.org

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Purpose: The 2016 American College of Chest Physician (CHEST) guidelines for the management of venous thromboembolism (VTE) now recommend the utilization of a direct oral anticoagulant (DOAC) over traditional low molecular weight heparin (LMWH)/warfarin therapy for the management of select, stable patients with a VTE. The primary objective of this study is to promote guideline-directed outpatient treatment of emergency department (ED) patients with newly diagnosed clinically stable VTE. Cost-savings generated by preventing hospital admissions for a primary diagnosis of VTE will be calculated.

Methods: This study has been submitted to and approved by the Investigational Review Board. Patients with a primary diagnosis of VTE and who are considered stable, as defined by CHEST, will be included in this prospective cohort analysis: clinically stable with good cardiopulmonary reserve; no contraindications including recent bleeding, severe renal or hepatic disease or severe thrombocytopenia defined as a platelet count < 70,000/mm3; expected to be compliant with treatment; and the patient feels well enough to be treated at home. Patients < 18 years of age, those on anticoagulation before developing a VTE, and those with malignancy will be excluded. De-centralized pharmacists in the emergency department will screen patients on an individual basis and communicate with prescribers about the most appropriate DOAC. Accepted interventions will be documented based on two criteria: admission vs. discharge from the ED, and treatment with a DOAC vs. standard LMWH/warfarin therapy. Cost savings and expenditures will be calculated and reported based on medication selection and treatment disposition chosen by the prescriber.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-226

Poster Title: Economic and clinical impact of a clinical pharmacist in a community hospital-affiliated patient-centered medical home

Primary Author: Meredith Tate, CHI Memorial, TN; **Email:** meredith_tate@memorial.org

Additional Author (s):
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Purpose: Some accountable care organizations (ACO) have included pharmacists as part of their coordinated care model in efforts to improve quality of care and reduce costs. The purpose of this study is to exhibit the economic and clinical value of pharmacist involvement by validating cost-savings and tracking clinical interventions. This study will also describe the methods used to establish successful integration of a clinical pharmacist into a collaborative relationship between a community hospital and patient-centered medical home (PCMH).

Methods: This is an observational prospective study. The pharmacist will collaborate with 3 providers within a community hospital-affiliated clinic. Services provided will be aligned with the goals of the ACO and will focus on high-risk patients, increasing generic utilization, and closing the transitions of care (TOC) gap. Additional services are to be provided through spontaneous consults. Specialized software will be used to identify high risk patients and opportunities for increasing generic utilization. The inclusion criteria consists of all patients under the care of the PCMH admitted to our hospital during the study period and those identified as high risk or eligible for conversion from a brand to less expensive generic drug. Patients not seen by a discharge pharmacist or who miss the TOC visit will be excluded. All patients included in the study will meet with the pharmacist prior to their TOC visit. The pharmacist will perform a medication reconciliation during this visit then address any issues with the provider. The TOC model includes medication reconciliation on admit and discharge by pharmacy technician and pharmacist, respectively, with follow-up in the PCMH. The primary endpoints assessed are quantity and associated cost-savings of generic utilization, number of spontaneous consults, total interventions, and actual patient cost per year. All data will be collected using secure software. Statistical analyses will be performed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Evaluative Study

Session-Board Number: 8-227

Poster Title: Evaluation of prescribing practices and glycemic management in a 365-bed community hospital

Primary Author: Ricky Church, CHI Memorial, TN; **Email:** ricky_church@memorial.org

Additional Author (s):
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Purpose: The purpose of this study is to objectively identify current prescribing practices and quantify the level of effectiveness of glycemic management at our institution. Following analysis, the goal is to implement a quality improvement strategy that will better optimize the glycemic management of our patients.

Methods: This is a single-center, retrospective, observational analysis of patients admitted to the hospital with an applicable ICD-10 code for type 1 or type 2 diabetes mellitus. Point-of-care testing devices will be utilized to gather capillary blood glucose measurements so that mean blood glucose levels may be assessed. The incidence of hyperglycemia and hypoglycemia will also be analyzed. Results from this analysis will be used to develop and implement targeted quality improvement strategies. Similar data collection and analysis is planned following strategy implementations so that the effectiveness of the quality improvement strategies may be evaluated. This study has been submitted and approved by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-228

Poster Title: Impact of multiplex polymerase chain reaction technology with antimicrobial stewardship interventions in the management of patients with positive blood cultures

Primary Author: Jenny Gibson, CHI Memorial, TN; **Email:** jenny_gibson@memorial.org

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Purpose: The delay that exists between patient presentation and traditional culture identification in patients with bloodstream infections may result in prolonged ineffective or broad-spectrum antimicrobial therapy. The objective of this study is to assess the impact of a rapid multiplex polymerase chain reaction (mPCR) blood culture identification (BCID) technology in conjunction with antimicrobial stewardship interventions in patients with positive blood cultures.

Methods: This study will be submitted to the Institutional Review Board for approval. The mPCR BCID panel will be implemented in October 2016. All positive blood cultures will be run on the panel and results will be transmitted via pager to an on-call pharmacist. This pharmacist will review the patient's profile and, if appropriate, contact the primary physician to make an antimicrobial recommendation based on an established protocol. Management of bacteremic and fungemic patients will be retrospectively compared pre- and post- intervention. Patients diagnosed with bacteremia or fungemia at an outside facility, neutropenic patients, patients who are discharged or expired less than 24 hours after admission, those with a polymicrobial source and patients with a suspected concomitant infection unrelated to the positive blood cultures will be excluded. The following data will be collected: baseline demographics, admitting infectious diagnosis, antimicrobials (empiric and final), stewardship intervention and relevant labs, mPCR and culture results. Primary endpoints include time to effective and de-escalated antimicrobial therapy pre- and post- mPCR BCID implementation. Secondary endpoints include length of stay (hospital and ICU), 30-day re-admission, all-cause mortality, Clostridium difficile PCR positive within 30 days of admission, and antimicrobial costs.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 8-229

Poster Title: Evaluation of a medication history pharmacy technician

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Purpose: The purpose of this evaluation is to assess the effectiveness of a medication history pharmacy technician in the emergency department (ED) to help improve the medication reconciliation process at hospital admission. In addition to the potential avoided medication errors and associated complications arising from them, it is anticipated this will decrease readmissions, improve transitions of care, provide cost savings of over $75,000 in nursing labor costs and allow for reallocation of nursing time to “top of license” activities.

Methods: A medication history technician role was justified and proposed to work in the emergency department (ED) within this community hospital. Assessment of similar published research, internal ED visit volumes and flows including those that convert to inpatient admissions, as well as current work processes have been analyzed in preparing the proposed approach and its evaluation. A business proposal was developed for 1.75 full-time equivalent pharmacy technicians to provide service in ten-hour shifts on an alternating 7-on, 7-off schedule. The role will have the technician work with patients and families to compile and then document thorough medication histories in the electronic health record at admission. The medication history pharmacy technician will work to prevent reconciliation issues by collecting accurate patient home medication lists, compiling patient allergies/intolerances, effectively communicating with other healthcare professionals, completing unit inspections for all ED and diagnostic imaging areas and assisting with the care and maintenance of pharmacy-related ED department equipment, hardware, and supplies.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Descriptive Report

Session-Board Number: 8-230

Poster Title: Bleeding risk stratification for anticoagulation selection in patients receiving percutaneous coronary intervention

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Purpose: The primary objective of this quality improvement project was to evaluate clinician adherence with the National Cardiovascular Data Registry (NCDR) Bleeding Risk Calculator by comparing the anticoagulant agent selected prior to percutaneous coronary intervention (PCI) with the recommended anticoagulant based on the calculated bleeding risk category. The HEAT-PPCI and MATRIX studies comparing unfractionated heparin and bivalirudin demonstrated no difference in all-cause mortality, cerebrovascular accident, re-infarction, or additional unplanned target lesion revascularization in low bleeding risk patients. Additionally, the 2013 AHA/ACC STEMI guidelines state that bivalirudin is preferred over unfractionated heparin with glycoprotein IIb/IIIa receptor antagonists in high bleeding risk patients.

Methods: This quality improvement project included one hospital facility utilizing the NCDR Bleeding Risk Calculator over a six week period from August 1, 2016 to September 14, 2016 and included all patients undergoing PCI in the cardiac catheterization lab for treatment of acute coronary syndromes or elective PCI procedures. Baseline bleeding risk, based on prescriber judgment, and anticoagulant selection data was collected one month prior to implementation of the bleeding risk calculator. The NCDR Bleeding Risk Calculator was provided to the facility in an electronic format and results were calculated and documented independently by the facility. The cardiac catheterization laboratory director facilitated data collection and was responsible for data management and reporting. A standardized bleeding risk documentation form was utilized at the facility to ensure consistent reporting with regards to the calculator classifications. Data collected included ST-elevated myocardial infarction vs. non-ST elevated myocardial infarction status, age, body mass index, prior PCI, chronic kidney disease, shock

status, cardiac arrest within the last 24 hours, gender, hemoglobin levels, PCI status (elective, urgent, or emergency).

Results: Baseline bleeding risk and anticoagulant selection data for 30 patients was collected one month prior to implementation of the bleeding risk calculator. All 30 patients in the baseline group were assessed by the clinician prior to performing the PCI and were stratified into bleeding risk categories using prescriber judgment. In the baseline group, 5 patients were classified as low bleeding risk, 18 patients were classified as medium bleeding risk, and 7 patients were classified as high bleeding risk. All patients (n=30) included in the baseline data set received bivalirudin prior to PCI. A total of 49 patients in the post-calculator implementation group were stratified into low (n=7), medium (n=31) or high (n=11) bleeding risk categories prior to PCI based on the NCDR Bleeding Risk Calculator. Utilization of the NCDR bleeding risk calculator resulted in the recommended anticoagulant being selected in 91.8% (n=45) of the post-implementation cases. Further stratifying by bleeding risk category in the post-implementation group, the recommended anticoagulant was selected in 85.7% of the low risk patients, 96.7% of the medium risk patients, and 81.8% of the high risk patients.

Conclusion: The results of this quality improvement project demonstrated that the utilization of the NCDR Bleeding Risk Calculator provided an objective method for stratifying patients into the appropriate bleeding risk category. Additionally, the results of this quality improvement project demonstrated that utilization of the NCDR Bleeding Risk Calculator provided clinicians with an effective method for anticoagulant selection in patients undergoing PCI. Finally, there may be significant cost-saving opportunities associated with the utilization of the NCDR Bleeding Risk Calculator. By stratifying patients into the various bleeding risk categories, clinicians have the ability to reserve bivalirudin for patients considered to be a high bleeding risk.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-231

Poster Title: Implementation of ambulatory care pharmacy services to reduce hospital readmission rates in a community hospital

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Purpose: Hospital readmission has been associated with poor quality of medical care. Recent additions to the Affordable Care Act now require Medicare payment reductions to hospitals with higher than predicted readmission rates. In response, several institutions have created transitional care programs in order to minimize penalties and improve patient outcomes. Our purpose is to create a pharmacist driven post discharge clinic at Cookeville Regional Medical Center (CRMC) targeting patients at high risk of readmission. Clinical pharmacist positions will also be established at a CRMC affiliated cardiology clinic to assess the impact of intensive patient medication counseling and pharmacist led pharmacotherapeutic intervention.

Methods: Patients will be targeted for the transitional care clinic by physician and pharmacist referral, as well as through the use of an automated risk index scoring tool. Clinic visits will occur three to five days post hospital discharge. Key objectives of the appointment are to ensure clear patient understanding and purpose of all medications, assess patient adherence to the prescribed regimen, and evaluate the need for any pharmacotherapeutic changes in order to achieve goals of therapy. The pharmacist will develop collaborative practice agreements granting the authority to initiate and deescalate agents, perform medication interchanges, and modify other aspects of medication management. In addition to establishing a transitional care program, pharmacists will be positioned in outpatient cardiology and pulmonology clinics. Pharmacist responsibilities are to complete any medication related tasks as requested by the physicians and nursing staff including but not limited to: providing extensive patient medication counseling, leading cardiac and pulmonary rehabilitation educational courses, answering drug information questions, and delivering new drug updates. Pharmacists will also perform thorough medication reviews and recommend pharmacologic modifications as clinically warranted. All encounters and interventions will be documented for review. Data on

myocardial infarction, heart failure, and chronic obstructive pulmonary disease hospitalizations and readmissions will be collected to measure impact of the new services.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-232

Poster Title: Decreasing Clostridium difficile infection and recurrence via pharmacist-led interventions in a community hospital

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Purpose: Clostridium difficile (CDI) has been identity by the CDC as an urgent threat to public health, contributing to increased hospital stays, medical costs, and adverse patient outcomes. CRMC has one of the highest rates of CDI in Tennessee. The objective of this project is to reduce CDI via targeted, evidence-based interventions and treatments. This initiative intends to maximize positive patient outcomes and decrease medical costs by curbing unnecessary use of antimicrobials and laboratory tests

Methods: Based on the identified need for increased CDI control, an interprofessional team has been formed, consisting of an infectious disease physician, gastroenterologists, pharmacists, microbiology staff, quality control, and nursing staff members, in order to oversee implementation of new ordersets. CDI ordersets will be revised to include fecal microbiota transplant and criteria for use for restricted antimicrobials like fidaxomicin and nitazoxanide. The ultimate goal is to create a unified order set to be utilized by all providers in order to foster optimal and consistent outcomes. Pharmacists will review all patients receiving antimicrobial therapy and CDI treatment, follow up on cultures and susceptibilities, and assess appropriate dosing. With input from gastroenterologist, algorithms and protocols will be written regarding stress ulcer prophylaxis with appropriate use and duration of proton pump inhibitor and histamine-2 receptor antagonist therapy. Focus will be put on education of medical staff via lectures and print material on pathogenesis, epidemiology, prevention, diagnosis, and treatment. A clinical decision support system will be implemented in order to collect data and identify at-risk patient populations.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 8-233

Poster Title: Implementation of a pharmacist-provided intensive education program for high-risk readmission patients in a regional medical center

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Purpose: The objective of this study is to implement and evaluate a pharmacist-driven patient education program based on identification of patient risk factors that could increase the likelihood of readmission due to disease-related complications. High-risk patient groups, including newly diagnosed, will be targeted for intensive education beyond established discharge counseling services. Disease states affected will include diabetes, anticoagulation, chronic obstructive pulmonary disease (COPD) and heart failure.

Methods: Patients with complex disease states and/or medication regimens are in need of extensive education in order to effectively achieve optimal outcomes. Clinical decision support systems will be utilized through mechanisms including, but not limited to:
diagnoses of diabetic ketoacidosis (DKA), heart failure, chronic obstructive pulmonary disease (COPD), hemoglobin A1C values, pro B-type natriuretic peptide, medication combinations such as beta-blockers and diuretics, anticoagulant orders, and inhaled bronchodilator orders. Focused patient educational material will be created to educate on disease states and medication regimens. Initial pharmacist education will be documented at the conclusion of the hospitalization. After education sessions, follow-up visits will be scheduled with the transitional care ambulatory pharmacy clinic to complete the continuum of care. Outcomes to be measured include time spent with patients, HCAHPS scores, 30-day readmission rates, and compliance with follow-up evaluations.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 8-234

Poster Title: Implementation of a medication stewardship program through collaborative practice with the hospitalist service in a community hospital.

Primary Author: Kinsi Tellep, Cookeville Regional Medical Center, TN; **Email:** kmtellep@crmchealth.org

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Purpose: The team-based healthcare approach has provided opportunities for pharmacists to collaborate with providers to optimize patient care. The aim of this project is to develop a medication stewardship program through a collaborative practice agreement with hospitalists at a community hospital. The hospitalist services wishes to use the expertise of the pharmacists to streamline patient medication regimens and enhance patient outcomes.

Methods: The medication stewardship program will be structured by a modifiable collaborative practice agreement that grants pharmacists the ability to autonomously change patients' medication regimens when appropriate. Initial target areas include, but are not limited to: antimicrobial stewardship, IV to PO conversions, anticoagulant dosing from prophylaxis to treatment, assessment of stress ulcer prophylaxis, therapeutic duplications, and dose optimization dependent upon disease state. The data from all interventions will be collected over a 3 month period at minimum with the goal of a 6 month evaluation period. This data will then be evaluated by the interprofessional team with the goal of credentialing and privileging of pharmacists as autonomous direct patient care providers within the facility.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-235

Poster Title: Evidence-based heart failure management process implementation at a residency-teaching clinic

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Purpose: The American College of Cardiology/American Heart Association/Heart Failure Society of America guidelines for management of heart failure were recently updated to included use of sacubitril/valsartan due to its proven ability to reduce mortality and hospitalizations over the current standard of therapy. With this guidance, a process was implemented to assist in appropriately screening patients for evidence-based pharmacotherapy. The objective of this study is to evaluate process implementation in a residency-teaching clinic. Implementation outcomes, such as pre- and post-provider knowledge of evidence-based pharmacotherapy, adoption of the new process, and its reach to patients with systolic heart failure will be assessed.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have heart failure. The following data will be collected: patient age, gender, ethnicity, ejection fraction, vital signs, serum creatinine, potassium, current medications, and reported adverse events. Providers will be educated on evidence-based medication management of systolic heart failure and will complete a pre- and post-education quiz. Providers will utilize a treatment algorithm to implement medication changes during patient appointments. This algorithm will include monitoring and follow-up recommendations. All data will be recorded without patient identifiers and maintained confidentially. Data from patients will be reviewed by the research team to rate compliance with evidence-based treatment guidelines. Additionally, providers will complete a post-process survey to rate the success of the implemented process.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-236

Poster Title: Evaluation of current heparin-induced thrombocytopenia management in an academic teaching hospital and opportunities for improved utilization of argatroban

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Purpose: Heparin-induced thrombocytopenia (HIT) is often over-diagnosed. Inappropriate diagnosis and management of HIT can lead to unnecessary treatments, increased healthcare costs, and increased length of stay. Furthermore, the failure to properly document suspected HIT can increase anticoagulation expenses during future hospital admissions. Literature has shown that a protocol designed and directed by pharmacists can improve the management of HIT. The purpose of this study is to evaluate the use of argatroban at a large, academic teaching hospital and to utilize the data as a means of developing an improved, evidence-based protocol for the management of HIT.

Methods: In this retrospective study, drug codes were used to identify all patients who received argatroban at our institution from May 2015 through May 2016. Data will be collected on each patient who received argatroban to pinpoint admissions in which HIT was a suspected or confirmed diagnosis. Medical records will be reviewed to assess the management of actual or suspected HIT as defined by the American College of Chest Physicians guidelines. Discrepancies between current practice at the study hospital and evidence-based best practices will be used to develop a new protocol for the order and management of argatroban and HIT.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-237

Poster Title: Use of a pharmacy based clostridium difficile risk tool in a community hospital

Primary Author: Sarah Wilson, Fort Sanders Regional Medical Center, TN; **Email:** swilso28@covhlth.com

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Purpose: The recently implemented Affordable Care Act incentivizes hospitals to establish a Hospital-Acquired Condition (HAC) Reduction Program to decrease and prevent HACs, which includes clostridium difficile infection (CDI). Hospital acquired CDI increases hospital costs, puts those infected at risk for extending hospitalizations and readmissions, and has a resultant mortality of approximately 10%. Multiple studies have identified risk factors for CDI, however, data is lacking determining which risk factors will be present in each CDI case as well as a successful strategy to consistently prevent CDI. This study evaluates a recently implemented pharmacist initiative to help prevent CDI in a community hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. High risk patients will be prospectively identified as defined by IDSA identified risk factors which include antimicrobial use, advanced age, gastrointestinal manipulation, chemotherapy, and immunosuppression on hospital units with patients at high risk for developing CDI (oncology, pulmonary, surgical) with the following information collected: antibiotics received prior to admission and during hospitalization, age, recent hospitalizations/long-term care stay, previous CDI, receipt of chemotherapy, use of proton pump inhibitors, GI tract surgery, tube feeding, albumin < 2.5 g/dL, serum creatinine > 2 mg/dL, and immunosuppression. Pharmacists will evaluate and provide recommendations to reduce modifiable risk factors which may include antibiotic streamlining and/or discontinuation of acid suppression therapy. Number and type of recommendations, the acceptance rate of recommendations, the incidence of CDI, and risk factors associated with each CDI case will be collected.

Results: n/a

Conclusion: n/a

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-238

Poster Title: Pharmacist driven order entry standards to improve compliance for “as needed” (PRN) pain medication orders

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Purpose: Computerized physician order entry (CPOE) has led to quicker order processing by pharmacy but may lead to overlooked details which may include duplication of therapy, orders without an indication, or for multiple indications. Implementation of an inpatient CPOE PRN order outline has allowed prescribers to quickly order medications based on severity rating (first line, second line, breakthrough agent). Despite order outlines, pharmacists must continue to ensure correct messaging from the pharmacy system into the nursing system for all PRN orders. The objective of this study is to identify opportunities to improve the order entry process to minimize PRN medication ambiguity.

Methods: This study is under review for IRB approval. A retrospective chart audit of PRN pain medication orders will be conducted to document indication, ordered medication, pharmacist interventions, and areas for improvement. Cardiovascular surgery, epidural or patient controlled analgesia use post-operatively, pregnant women, and children will be excluded. Based on the audit findings, the PRN medication policy will be reviewed for compliance and potential changes. Pharmacy staff will be educated on any changes to the order entry process. Following education, a follow-up audit will be performed. The data collected will be reviewed and compared with the preliminary audit to evaluate improvement.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 8-239

Poster Title: Evaluation of an opioid taper protocol for patients at high risk of opioid related adverse events in a hospital setting.

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Purpose: The 2016 Centers for Disease Control Guidelines for prescribing opioids for chronic pain recommend tapering or discontinuation of opioids when risks outweigh benefits of continued therapy for patients receiving treatment outside active cancer, palliative care, and end-of-life care. The objective of this study is to evaluate an opioid taper protocol at Fort Sanders Regional Medical Center in patients with chronic opioid use greater than or equal to 90 morphine milligram equivalents (MME) daily for indications other than active cancer, palliative care, end of-life-care, post-surgical pain, and at an elevated risk of opioid related adverse events.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients will be identified by practitioners in which the risk of adverse effects with continued opioid use is greater than the benefits of opioid therapy. The protocol will require patients to have their opioid medications tapered while pain management will be augmented with non-opioid therapies. Prescription records will be validated using the Tennessee Controlled Substance Monitoring Database and patient electronic medical record system to determine baseline opioid usage. Patients will be converted to morphine sulfate sustained-release dosed twice daily with dose reductions occurring over 12 days. The taper schedule will reduce doses every 2 days until completion with an initial decrease of 25 percent from baseline, then additional 25 percent, 20 percent, 10 percent, and finally 10 percent to equal zero MME daily. The maximum initial dose will be 120mg by mouth twice daily to ensure safety. Patients will be followed throughout the taper process. The following data will be collected: patient age, gender, ethnicity, diagnoses, pain scale ratings, opioid usage, and Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey scores. The primary outcomes that will be

assessed are opioid usage prior to protocol initiation and at discharge, pain scale ratings, adverse events reported, adherence to the opioid taper protocol, and change in HCAHPS scores.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 8-240

Poster Title: Evaluation of weight based dosing of gentamicin in pregnant patients with urinary source infections

Primary Author: Danielle Walker, Fort Sanders Regional Medical Center, TN; **Email:** dwalke11@covhlth.com

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Purpose: Gentamicin is commonly used within the hospital setting for the treatment of urinary source infections in the pregnant population. In an effort to optimize dosing, this study seeks to retrospectively evaluate the gentamicin peak and trough levels from pregnant patients treated with gentamicin. This community hospital currently uses traditional weight-based dosing of 1-2 mg/kg of actual body weight (or ideal body weight if they are >120% of their ideal weight) and follows drug levels to assess efficacy and safety. This study will use this information to evaluate pharmacokinetic parameters, volume of distribution, and other specific dosing considerations for this population.

Methods: This study will include a retrospective chart review of pregnant patients over the last five years (2011-2016) to determine the dosing regimen and if those patients achieved goal peak levels in order to treat their urinary source infection. The review will exclude peri-operative or single dose orders and any regimen where a peak or trough level was not obtained. This information will then be extrapolated to determine trends, effects of weight, and variation of volume of distribution in this specific patient population for the dosing of gentamicin for the treatment of a urinary source infection.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-241

Poster Title: Assessment of real-time pharmacy alerts and interventions for timely vancomycin de-escalation

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Purpose: The concern for methicillin-resistant Staphylococcus aureus results in high empiric usage of intravenous (IV) vancomycin therapy in the hospital setting. However, vancomycin treatment for methicillin-sensitive S. aureus bacteremia has been associated with poor clinical outcomes and increased morbidity and mortality compared to therapy with an anti-staphylococcal penicillin or a first-generation cephalosporin. One of the key principles in antimicrobial stewardship is culture-driven de-escalation of antibiotic therapy, which leads to reduced drug toxicities and a reduced risk of antimicrobial resistance. The objective of this study is to assess the timeliness of vancomycin de-escalation across a multi-hospital healthcare system.

Methods: This study will be a multi-center, retrospective, observational study, which will be submitted to the Institutional Review Board for approval. The real-time antimicrobial pharmacy alerts will be used to identify patients who received IV vancomycin during their hospitalization between September 1, 2015, and August 31, 2016. Patients who meet the following criteria will be excluded from the study: No cultures drawn prior to the initiation of antimicrobial therapy, absolute neutrophil count of less than 1,000, primary diagnosis of skin and soft tissue infection, or death before the culture(s) resulted. The following data will be collected: Patient age, gender, allergies, comorbidities, time of first pharmacy de-escalation alert, culture source, end-organism(s) identified, antimicrobial susceptibilities, duration of vancomycin and total antimicrobial therapy, length of hospital stay, in-hospital, all-cause mortality, and readmission rates at 30 and 90 days post discharge. The primary outcome of this study is the time from the

first real-time pharmacy alert to the time of IV vancomycin therapy de-escalation. Secondary outcomes include the percentage and rationale of alerts not intervened upon by the care team, in-hospital, all-cause mortality rate, 30- and 90-day post-discharge readmission rates, and the time to the acknowledgement of the real-time pharmacy de-escalation alerts.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-242

Poster Title: Evaluation of medications for malignant melanoma in Medicare beneficiaries: A utilization review and cost analysis

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Additional Author (s):
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Purpose: Malignant melanoma, one of the most immunogenic types of solid tumors, is the most dangerous form of skin cancer with high risk of metastasis and genetic implications. In the United States, approximately 76,380 individuals will be diagnosed with melanoma in 2016, with 10,130 expected deaths. However, melanoma can be treated with immunotherapy or targeted therapy. The economic burden of these treatments is approximately $44.9 million in annual costs among Medicare patients. The purpose of this retrospective study is to evaluate resource utilization of Medicare Part B and Part D beneficiaries receiving oral and injectable medications for malignant melanoma.

Methods: Medicare beneficiaries who underwent pharmacological treatment for malignant melanoma between calendar years 2013 and 2014 will be included in this study. Medicare Provider Utilization Payment Data will be utilized including Part D Prescriber Public Use Files (PUF), Medicare Physician and Other Supplier Data, and Medicare Outpatient Prospective Payment System (OPPS) Means Files. Medications will be identified by drug name and Healthcare Common Procedure Coding System (HCPCS) code sets. Trends in Medicare spend for associated lab tests for BRAF mutations during the study period will be determined as well as baseline comparisons of guideline changes with advances in therapy. This study will be submitted for approval by the University of Tennessee Health Science Center (UTHSC) Institutional Review Board (IRB).

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-243

Poster Title: Evaluating the impact clinical variables have on reported positive Clostridium difficile infection rates

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Additional Author (s):
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Ed Septimus

Purpose: The incidence of clostridium difficile infection (CDI) has become one of the most significant threats to hospitalized patients and represents an increasingly important issue in terms of morbidity and mortality. In addition, it is associated with extended hospital stay and increased resource utilization. According to a Healthcare Cost and Utilization Project report released in 2014, the incidence and projections of CDI are increasing. Healthcare facility-onset is defined as a positive specimen collected after the third day of admission to the facility. The purpose of this large, multicenter retrospective study is to evaluate the factors that influence CDI rates.

Methods: Adult patients with a positive lab value for CDI between October 1, 2015 and September 31, 2016 will be included in this study. Along with basic patient demographics, the following data related to CDI will be collected: risk factors for CDI (e.g., antibiotic exposure, gastrointestinal surgery, admission from a long term care facility), concomitant medications, the time the CDI test and/or repeat tests were collected, length of hospital stay, admission date and date of previous hospital admission. Data analyzed in this study will be collected from a centralized enterprise data warehouse. The electronic medical record system will be used to retrospectively review data from inpatient hospital facilities within a large health-system across the United States. All data will be recorded without patient identifiers and maintained confidentially. This study will be submitted for approval by the Institutional Review Board. Following data collection, the primary outcome to be evaluated will be rates of CDI per antibiotic class.

Results: In progress

Conclusion: In progress

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-244

Poster Title: Retrospective analysis of glucose management following the resolution of diabetic ketoacidosis (DKA) within a community hospital

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Purpose: Diabetic ketoacidosis (DKA) is an acute complication of uncontrolled diabetes mellitus and has been associated with extended hospital stay, long-term mortality, and increased resource utilization. Treatment guidelines provide a stepwise approach to the management of DKA, which includes fluid, electrolyte, and intravenous insulin administration. Current recommendations promote the efficient transition of stabilized patients from intravenous insulin to subcutaneous insulin. The purpose of this retrospective study is to analyze the appropriateness of insulin transition following DKA at a community hospital.

Methods: Adult patients with a diagnosis of DKA admitted to the hospital between August 1, 2015 and July 31, 2016 will be included in this study. The following data will be collected: patient demographics, pertinent lab data, insulin regimen utilization, timing of insulin administration, length of stay, and other patient-specific parameters. Patient electronic medical records, including physician orders, progress notes, and the medication administration record, will be used to retrospectively review data. This study will be submitted for approval by the University of Tennessee Health Science Center (UTHSC) Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-245

Poster Title: Retrospective analysis of hyperglycemia triggers and glucose management in a community hospital using a real-time clinical surveillance tool (RTCST)

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Purpose: Inpatient hyperglycemia is associated with poor outcomes and mortality. Available guidance defines inpatient hyperglycemia as persistently elevated blood glucose >140 mg/dL. Recommendations also include a threshold of 180 mg/dL for initiating insulin treatment, with a target range of 140-180 mg/dL, unless a range of 110-140 mg/dL can be achieved while minimizing hypoglycemia. The purpose of this retrospective study is to analyze RTCST activations and current glucose management protocols at a community hospital to define opportunities for practice change. The results of the analysis will be used to develop a hyperglycemia protocol and a pilot implementation strategy for a healthcare enterprise.

Methods: Adult patients with RTCST activations indicating initiation of insulin who were admitted to the hospital between March 1, 2016 and August 31, 2016 will be included in this evaluation. Patients receiving insulin therapy via intravenous infusion will be excluded; these patients will be evaluated in a related study. Basic patient demographics, patient lab data, insulin regimen utilized, timing of events, length of stay, admission date and time, as well as other patient specific parameters will be collected. Data will be collected from a centralized enterprise data warehouse and patient electronic medical records. All data will be de-identified to maintain confidentiality. This study will be submitted to the Institutional Review Board.

Results: in progress

Conclusion: in progress

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-246

Poster Title: Evaluating bleeding risk using a point-of-care platelet function assay in cardiac surgery patients exposed to P2Y12 inhibitors

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Purpose: The use of P2Y12 inhibitors in the perioperative period can increase the risk of bleeding. It is recommended to discontinue the use of these agents at least 5 days prior to surgery by the American College of Cardiology Foundation and American Heart Association. However, studies suggest that recovery of platelet function may occur earlier than the recommended 5 days. The Society of Thoracic Surgeons suggest that testing for platelet responsiveness can determine if patients qualify for earlier surgical intervention which can mean earlier cardiac revascularization and an decrease in hospital length of stay.

Methods: A retrospective cohort study will be performed reviewing electronic medical records. The primary objective of this study is to determine if there is a correlation of platelet reactivity using the VerifyNow® point-of-care platelet assay and bleeding post cardiac surgery. Secondary outcomes include time from discontinuation of P2Y12 inhibitor to surgery and hospital length of stay (LOS). Platelet reactivity will be assessed in P2Y12 Reactive Units (PRU) using the VerifyNow® P2Y12 assay. Bleeding will be measured by transfusion requirements, chest tube output, as well as the occurrence of perioperative intracranial bleeding and reoperation to control bleeding. PRU results and timing of P2Y12 inhibitor discontinuation and surgery start time will also be collected, along with hospital LOS.

Results: Results will be presented on difference in bleeding events for PRU ranges following cardiac surgery as well as length of time from P2Y12 inhibitor discontinuation to surgery and hospital LOS.

Conclusion: Data analysis pending, results to be presented.

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 8-247

Poster Title: Implementation of pharmacy-prepared prefilled anesthesia syringes in the operating rooms

Primary Author: Michael Massmann, HCA/UT College of Pharmacy, TN; **Email:** michael.massmann@hcahealthcare.com

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Purpose: Perioperative medication administration bypasses many of the checks and balances in place to prevent medication errors. In addition, medication preparation in the operating room (OR) setting can lead to unnecessary medication waste and increased costs. The use of prefilled syringes has demonstrated increased compliance with national recommendations. The purpose of this standardization project is to measure waste, compounding time, cost, and clinician satisfaction with pharmacy-prepared prefilled syringes.

Methods: In an attempt to create standardization of medication administration in the hospital OR setting, a pilot of five medications was selected to be drawn up in prefilled syringes by the pharmacy department for all OR suites at two facilities. Glycopyrrolate, neostigmine, succinylcholine, ephedrine, and phenylephrine were chosen after an evaluation of commonly used anesthesia-administered medications. Retrospective data gathered from the anesthesia team included doses administered during a three-month period. In collaboration with the anesthesia team, this data led to our standard syringe dose, volume, and concentration for each medication. A cost analysis was performed to identify additional labor required to implement the prefilled syringe process. Syringes are compounded using a pump promoting standardization of the process and increasing efficiency of preparation. The beyond use dating of the syringes will be determined by stability testing after the finalization of the preparation process. Following implementation of the prefilled syringe pilot, outcomes to be measured will include: waste, preparation efficiency, cost, and satisfaction of the anesthesia team. This study is seeking approval by the University of Tennessee Health Science Center Institutional Review Board.

Results: In progress.

Conclusion: In progress.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-248

Poster Title: Inpatient hyperglycemia managed with basal and bolus or sliding scale insulin in the non-critically ill at a rural hospital: an observational study

Primary Author: Devin McKenzie, Henry County Medical Center, TN; **Email:** dmckenzie@mail.hcmc-tn.org

Additional Author (s):
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Purpose: Insulin is a mainstay of therapy in the treatment of inpatient hyperglycemia. Uncontrolled hyperglycemia in hospitalized patients is associated with poorer clinical outcomes, such as prolonged hospital stay, increased readmissions and urinary tract infections. Clinical literature supports improved outcomes in hyperglycemic patients when insulin therapy consists of basal and bolus regimens when compared to sliding scale insulin monotherapy. The primary purpose of this retrospective analysis is to evaluate the effectiveness of basal and bolus insulin as compared to sliding scale insulin in the treatment of inpatient hyperglycemia at a rural community hospital in non-critically ill inpatients.

Methods: This study will be submitted to the Medical Executive Committee for approval. It is designed to determine the overall effectiveness of two different insulin regimens to decrease length of stay in general ward patients. To evaluate this relationship, study authors will perform a retrospective chart review of non-critically ill patients admitted and insulin regimen used for the treatment of hyperglycemia. Patients will be placed into one of two groups: basal-bolus regimen and sliding-scale regimen. For purposes of this study, authors have defined hyperglycemia as any two-blood glucose readings of 180 mg/dl or greater with in a 24-hour period while hospitalized. Daily blood glucose levels in each group will be averaged over the period of each patient stay. Groups will be compared with a final statistical analysis to detect differences in patient outcome measures with the primary endpoint being the mean length of hospital stay. Secondary endpoints will include rates in hyperglycemia during treatment, new urinary tract infections, and readmissions between groups. A safety analysis will be performed

regarding the incidence of hypoglycemia. Descriptive statistics will be used to analyze collection data.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-249

Poster Title: Impact of delayed prescription filling on 30-day readmission rate following hospital discharge for heart failure or chronic obstructive pulmonary disease

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Additional Author (s):
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Purpose: The purpose of this retrospective study is to determine if a delay in prescription filling of greater than 48 hours following hospital discharge in patients with a primary diagnosis of heart failure or chronic obstructive pulmonary disease leads to an increase in 30-day readmission rate.

Methods: This study will be submitted to the Medical Executive Committee for approval. Utilizing the electronic medical record, researchers will identify those discharged home with a new prescription(s) related to a hospital admission secondary to an exacerbation of heart failure or chronic obstructive pulmonary disease. These patients' primary outpatient pharmacy(ies) will be documented and contacted to determine the date and time of initial prescription fill following hospital discharge. Time of prescription fill will be compared to time of discharge and patients will be categorized into two comparative groups: prescriptions filled within 48 hours and prescriptions filled after 48 hours. Further review will be conducted to determine number of patients that were readmitted within 30 days of discharge. Additionally, electronic medical records will be reviewed to determine if pharmacist-led medication counseling prior to discharge was completed, per facility policy , to determine further impact on readmission rates.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-250

Poster Title: Closing the Gaps on an Interprofessional Transitional Care Program: Evaluating the Impact of Pharmacist-Provided Discharge Counseling on 30-day Readmission Rates

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Additional Author (s):
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Purpose: The Center for Medicare and Medicaid Services has instituted payment penalties for hospitals with high readmission rates for patients with specified diagnoses, which has led to an effort to decrease overall readmissions and thereby cut costs incurred by health systems. At Holston Valley Medical Center, the pharmacy department implemented a pilot program to provide discharge counseling to patients at high risk of readmission, on top of an existing nurse-driven protocol. The objective of this study is to evaluate the effect of pharmacist-provided services as part of an interprofessional team on 30-day readmission rates.

Methods: This retrospective analysis evaluates hospital readmissions between July 6, 2016 and January 6, 2016 and compares three months of a newly instituted nurse-driven protocol with the following three months after the addition of pharmacy services. Pharmacy services included: reviewing a list of admitted patients daily to identify those at highest risk of readmission and for whom discharge medication lists had been completed, discharge medication reconciliation, medication counseling, and the creation of a patient-friendly medication summary to clearly indicate medications to be discontinued, new medications to start, and ones that are being continued, with more specific instructions and guidance for the patient or caregiver. Patients age 18 years or older who had a high risk LACES readmission score are included. Exclusion criteria are: pregnancy, discharge within 24 hours, patient left against medical advice, discharge to a skilled nursing facility, discharge to hospice care, or death prior to discharge. The primary outcome is overall hospital readmission rate. Secondary outcomes are readmission rate for patients age 65 years or older and readmission rate for high risk patients. All outcome measures will be evaluated using chi-square test.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-251

Poster Title: Evaluation of enoxaparin thromboprophylaxis in morbidly obese patients based on anti-Xa levels

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Additional Author (s):
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Purpose: Enoxaparin is approved for venous thromboembolism prophylaxis at the dose of 30 mg every 12 hours or 40 mg once daily in those with good renal function, regardless of patient size. A common measure of appropriate thromboprophylaxis is serum anti-Xa levels. Morbidly obese patients or those larger are often under-dosed and experience subtherapeutic anti-Xa levels. This retrospective study analyzes anti-Xa levels for morbidly obese patients (BMI of greater than or equal to 40) receiving enoxaparin 40 mg twice a day and those with a BMI of greater than or equal to 50, receiving 60 mg twice a day.

Methods: This study will be submitted to the Institutional Review Board for approval. Information is to be collected retrospectively from the electronic medical record using EPIC software on a standardized form under a non-identifying subject number. Data recorded will include: patient age, gender, weight, height, BMI, diagnoses, enoxaparin dose, anti-Xa level, creatinine clearance, and evidence of drug related events. Patients evaluated will be those greater than or equal to 18 years of age, have a BMI of greater than or equal to 40, and were given enoxaparin for thromboprophylaxis per protocol at Holston Valley Medical Center. The primary endpoint is to evaluate the achievement of target anti-Xa levels in the patient groups (BMI 40-49, greater than or equal to 40, greater than or equal to 50) comparative to the enoxaparin dose given. The secondary endpoints regard safety and evaluate: Rates of bleeding, thrombocytopenia (Platelets greater than or equal to 50 percent decrease from baseline or drop to less than 100,000/ microliter), and symptomatic venous thromboembolism. Data will be analyzed using Fisher's Exact for categorical data, such as achievement of target anti-Xa, and t-test for continuous data such as average anti-Xa level achieved. The results of this analysis will be presented at the meeting.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-252

Poster Title: Evaluation of the safety and efficacy of a standardized hypoglycemia protocol

Primary Author: Sarah Ayers, Jackson- Madison County General Hospital, TN; **Email:** sayers4904@bellsouth.net

Additional Author (s):
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Purpose: Due to the risk of hypoglycemia, The Joint Commission (TJC) and the Institute for Safe Medication Practice (ISMP) both recognize insulin products as high-alert medications. Acute hypoglycemic episodes in patients with diabetes can lead to complications including confusion, loss of consciousness, seizures, and even death. Due to the risks to patient safety posed by hypoglycemia and varying treatment practices, our institution developed a hypoglycemia treatment protocol designed to standardize the treatment of hypoglycemic events in the inpatient setting. The purpose of this medication use evaluation was to evaluate the safety and efficacy of this hypoglycemia protocol.

Methods: This medication use evaluation was exempt from institutional review board approval as it was deemed a quality improvement project. Patients who experienced at least one blood glucose level less than 70mg/dL during a specified period of time were selected for a retrospective chart review. Inclusion criteria include inpatients 18 years of age or older who experienced at least one measured hypoglycemic event. Exclusion criteria include patients with erroneous blood glucose measurements less than 70mg/dL as determined by a measured blood glucose level greater than 70mg/dL within 5 minutes of the initial hypoglycemic reading. The primary endpoint for this study was rate of adherence to our institution's hypoglycemia protocol. Secondary endpoints included time to fist blood glucose measurement after administering treatment for hypoglycemia, percent of time treatment resulted in resolution of hypoglycemia, percent of time first treatment resulted in resolution, time to resolution of hypoglycemia, percent of patients experiencing recurrence of hypoglycemia after treatment, and percent of time treatment resulted in severe hyperglycemia as determined by blood glucose greater than 250mg/dL at measurement immediately following treatment.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-253

Poster Title: Hydromorphone medication utilization evaluation: defining and capturing meaningful outcome and process measures

Primary Author: Sonia Pernia, Jackson-Madison County General Hospital, TN; **Email:** sonia.pernia@wth.org

Additional Author (s):
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Purpose: The Institute for Safe Medication Practices recognizes opioids as high alert medications in the acute care setting. As such, The Joint Commission addressed patient safety regarding inpatient opioid use in a 2012 Sentinel Event Alert. This alert suggests actions to take to avoid opioid related adverse events, encouraging hospitals to "create and implement policies and procedures for tracking and analyzing opioid-related incidents." With this medication use evaluation, we will define institution-specific outcome and process measures, identify data sources for capturing reliable data, establish a baseline description of hydromorphone use, and delineate a reproducible method for future monitoring of hydromorphone use.

Methods: Institutional Review Board approval was waived for this medication utilization evaluation as a quality improvement project. Patients with a hydromorphone order between July 11, 2016 and July 24, 2016 were selected for retrospective chart review. Automated dispensing cabinet data were also collected for each patient for the defined study period in order to assess hydromorphone removal on override as well as naloxone administration. A fourteen-day time period was chosen in order to mirror previous data collection periods. The Pennsylvania Patient Safety Authority's "Hydromorphone Measures Worksheet" was used as a starting point to identify outcome and process measures for this project. Outcome measures that will be assessed include respiratory complications, central nervous system complications, and treatment for adverse events (naloxone or oxygen administration). Prescribing, dispensing, administration, and monitoring process measures that will be assessed include [Prescribing] incidence of non-protocol orders, doses greater than 1mg administered to opioid-naïve patients, and PCA basal doses in opioid-naïve patients; [Dispensing] pharmacist interventions on hydromorphone orders; [Administration] hydromorphone doses removed from automated dispensing cabinets without a pre-existing order; and [Monitoring] number of patients on

hydromorphone PCA without continuous pulse oximetry monitoring. Pharmacist interventions include dose corrections, instruction clarifications, and discontinuation of duplicate opioid medications orders for severe pain. All data points and sources will be defined to create a standardized tool that could be used for future monitoring.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-254

Poster Title: Evaluation of overanticoagulation associated with concomitant warfarin and select antimicrobial therapy in the inpatient setting

Primary Author: Emily Gateley, Jackson-Madison County General Hospital, TN; **Email:** emily.gateley@wth.org

Additional Author (s):
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Purpose: The 2016 Joint Commission National Patient Safety Goal 03.05.01 states to "take extra care with patients who take medicines to thin their blood." Warfarin, the most commonly prescribed anticoagulant, is highly susceptible to drug-drug interactions, with antimicrobial agents causing some of the more severe interactions. Initiating antimicrobial therapy in a patient receiving warfarin is associated with a 2-fold increased risk of bleeding. The purpose of this study is to evaluate the incidence of overanticoagulation associated with concomitant warfarin and select antimicrobial therapy in the inpatient setting.

Methods: This medication use evaluation is a quality improvement project and has been granted exemption from institutional review board approval. Electronic medical records will be used to identify patients who were prescribed at least one oral antimicrobial agent concomitantly with warfarin between January 2016 and June 2016. Inclusion criteria consist of patients over the age of 18 on warfarin therapy prior to hospitalization that were started on an antimicrobial agent deemed to cause a drug-drug interaction. The following classes of antimicrobial agents will be targeted: azole antifungals, macrolides, sulfonamides, penicillins, cephalosporins, tetracyclines, and metronidazole. Exclusion criteria will consist of new warfarin initiation, concomitant antimicrobial therapy duration of less than 3 days, argatroban therapy, documented liver dysfunction, and documented heart failure exacerbation. A standardized data collection sheet will be used for each patient that meets criteria. Data will be analyzed to determine the incidence and management of overanticoagulation associated with concomitant warfarin and select antimicrobial agents.

Results: In Progress

Conclusion: In Progress

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-255

Poster Title: Impact of a rapid diagnostic blood culture identification panel on timing of appropriate antimicrobial therapy in patients with bloodstream infections.

Primary Author: Olivia Davis, Johnson City Medical Center, TN; **Email:** davisoa@msha.com

Additional Author (s):
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David Jones

Purpose: Sepsis is the 10th leading cause of mortality in the United States and accounts for roughly 20 billion dollars of the United States healthcare budget. Delays in appropriate antimicrobial therapy leads to increase in mortality. Improvements in rapid diagnostics in microbiology have led to earlier identification of organisms, although the clinical significance is unknown. The purpose of this study is to assess the clinical impact of a rapid diagnostics blood culture panel on the timing of appropriate antimicrobial therapy prescribing.

Methods: This study will be submitted to the Institutional Review Board at East Tennessee State University for approval. Study design is a controlled before-and-after study. Similar time periods will be evaluated before and after the implementation of a rapid diagnostics blood culture panel, the FilmArray blood culture identification panel. Patients will be identified using Premier's Safety Surveillor for the pre-implementation and internal microbiology reports for post-implementation. Inclusion criteria are patients 18 years or older with a positive blood culture. Patients will be excluded for blood cultures positive for coagulase negative staphylococci. Primary endpoint will be the time to appropriate antimicrobial therapy. Secondary endpoints include number of patients requiring escalation, number of patients requiring de-escalation, sepsis related-mortality rates, hospital length of stay and intensive care unit length of stay. Charlson Comorbidity Index will be calculated to compare severity between groups. Additional data points to be collected include patient age, sex, mortality, blood cultures, empiric antimicrobial therapy, time to organism identification, identification of organism, and final or targeted antibiotic. Appropriate therapy is defined as therapy covering organism and elimination of duplicate or unnecessary coverage (de-escalation). Continuous

variables will be compared using a student's t-test and categorical variables will be compared using Chi squared or Fisher's exact test.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-256

Poster Title: Impact of a 72 hour automatic stop and pharmacist-led review on the empiric use of vancomycin

Primary Author: George Wohlford, Johnson City Medical Center, TN; **Email:** gfwohlford@gmail.com

Additional Author (s):
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Purpose: It has been estimated that up to 50 percent of antibiotics prescribed to humans are inappropriate, leading to an increase in drug resistance and adverse events. To combat this, many institutions develop global initiatives designed to reduce inappropriate prescribing. One strategy is the implementation of automatic stop dates when antibiotics are ordered empirically through an order set. Pharmacist-led review with prescriber callback is necessary to avoid interruptions in care when therapy is truly indicated. This study is designed to evaluate the impact of a 72 hour automatic stop with pharmacist-led review on empiric use of vancomycin.

Methods: This study will be submitted to the East Tennessee State University Institutional Review Board for approval. The study design will be a retrospective cohort review evaluating the impact of a 72 hour automatic stop date with pharmacist-led review implemented in October 2015 at the Johnson City Medical Center on empiric utilization of vancomycin. Patients will be included if they are 18 years of age or older, admitted to inpatient status, and started on vancomycin within 12 hours of admission via order set. Patients will be excluded if they have microbiological evidence for continuation of vancomycin, diagnosed with culture-negative endocarditis or osteomyelitis, vancomycin ordered for surgical prophylaxis or continuation from home or other facility, or are pregnant. The primary endpoint will be average length of therapy for vancomycin in each cohort. Secondary endpoints include overall days of therapy per 1000 patient days, rates of therapy continuing past 72 hours, average length of stay, rates of acute kidney injury, and rates of therapy interruption. Additional data points to be collected include vancomycin indication, pathway or order set from which vancomycin originated, age, sex,

weight, height, serum creatinine. Charlson Comorbidity Index will be calculated for each cohort. Continuous variables will be compared using student's t-test. Categorical variables will be compared using Fisher's exact or Chi-square test.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-257

Poster Title: Clonidine for prevention of withdrawal after dexmedetomidine use in children

Primary Author: Alicia Sanchez, Le Bonheur Children's Hospital, TN; **Email:** alicia.sanchez@lebonheur.org

Additional Author (s):
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Purpose: Studies have reported withdrawal symptoms in patients who have received prolonged dexmedetomidine infusions. Based on its similar chemical structure and mechanism of action, clonidine is a logical agent for use in patients in whom there is a concern for withdrawal. The objective of this study is to assess the use of clonidine in pediatric patients who have received dexmedetomidine for sedation in an intensive care unit. Secondary analyses will aim to identify factors that may increase the risk of withdrawal.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify patients less than eighteen years of age who received a dexmedetomidine infusion and clonidine for prevention of withdrawal. Patients will be excluded if they received methadone or clonidine within 30 days prior to dexmedetomidine. Data collected will include each patient's age, weight, sex, primary diagnosis, hospital unit, intensive care unit length of stay, ventilator days, hospital length of stay, use of other sedatives, dose and duration of dexmedetomidine, and duration of clonidine wean. Heart rate and blood pressure will also be collected for assessment of withdrawal. This information will be used to evaluate trends in clonidine weaning by assessing the duration of clonidine wean compared to the dose and duration of the dexmedetomidine infusion. For patients who had a documented clonidine wean, the percentage of patients who required an adjustment to the original wean will be determined. Additionally, factors that may increase the risk of dexmedetomidine withdrawal will be assessed.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-258

Poster Title: Evaluation of the impact of antimicrobial stewardship on necrotizing enterocolitis outcomes

Primary Author: Nicole Palazzolo, Le Bonheur Children's Hospital and The University of Tennessee Health Science Center, TN; **Email:** nicole.palazzolo712@gmail.com

Additional Author (s):
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Bindiya Bagga

Purpose: There exists a paucity of data guiding clinicians regarding antimicrobial selection and duration for patients diagnosed with necrotizing enterocolitis (NEC), potentially leading to broader spectrum antimicrobial coverage than may be clinically necessary. At Le Bonheur Children's Hospital, Antimicrobial Stewardship Neonatal Intensive Care Unit (NICU) Guidelines were implemented to provide guidance regarding antimicrobial use. The purpose of this study is to evaluate the impact of this initiative on outcomes associated with NEC. Outcomes assessed pre- and post-implementation of the guidelines will include mortality, length of hospital stay, development of fungal sepsis, days until full enteral feeds and need for surgical intervention.

Methods: In this single center, retrospective, quality improvement study, a chart review of pediatric patients admitted from July 2010 through July 2016 with a documented diagnosis of NEC will be conducted. All patients included will be admitted to the NICU at Le Bonheur Children's Hospital with a clinical and/or radiologic confirmed diagnosis of stage I, II or III NEC at any time during their admission. Patients will be excluded if there is poorly documented antimicrobial use information for patients transferred to Le Bonheur following their NEC diagnosis, or if antimicrobial agents were discontinued after less than 48-72 hours of therapy. Details of antimicrobial agent, dosing and duration will be collected. Additional data collected via chart review will include demographic information, comorbidities, duration of mechanical ventilation, culture results, days to full enteral feedings, requirement for surgery as well as other clinically relevant patient and laboratory findings.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-259

Poster Title: Stigma Toward Antipsychotic Medication among Healthcare Clinicians

Primary Author: Tyler Casey, Lipscomb University College of Pharmacy, TN; **Email:** tyler.casey@lipscomb.edu

Additional Author (s):

Purpose: Patients with mental illness have many barriers to receiving comprehensive and effective treatment. One barrier is the stigma associated with one of the most common classes of medications in mental health, antipsychotics. Although research has been conducted to investigate stigma from and directed toward patients, little has been done to look at stigma toward antipsychotic medications. This study seeks to assess and define how much of that stigma originates from healthcare professionals.

Methods: This study has been submitted and approved by the Lipscomb IRB committee. Data will be collected through the use of an extensive survey distributed online and via physical mail. The survey will be distributed to physicians, pharmacists, pharmacy students, nurses, physician assistants, and healthcare social workers. Types of questions in the survey include likert scale questions, semantic differential scale questions, and interval scale questions. Background data collected from participants will include practice setting, profession, specialty, years in practice, gender, ethnicity, age, and location. Questions in the survey will be centered around perceptions of antipsychotics, side effects of these medications, what types of patients take antipsychotics, risk/benefits of antipsychotics, what diagnoses antipsychotics should be used to treat, and so on. Once the data is collected, it will be analyzed for an overall level of stigma toward antipsychotic medication. Data will also be used to compare difference in responses from different professions, practice settings, and years in practice.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-260

Poster Title: Retrospective review of a pharmacist managed diabetes clinic on hemoglobin a1c

Primary Author: Cindy Kaing, Lipscomb University College of Pharmacy, TN; **Email:** cindy.kaing@lipscomb.edu

Additional Author (s):
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Purpose: Over 29 million adults in the United States have diabetes. Many of those affected experience complications such as heart disease, retinopathy, kidney disease, and neuropathy. The healthcare cost associated with diabetes is astronomical, accounting for more than 20 percent of the total cost. From a financial and health standpoint, it is essential that providers and patients work together to optimize care. Clinical pharmacists specializing in diabetes management can provide focused care regarding non-pharmacological and pharmacological management of these patients. Our research will evaluate the impact a pharmacist can have on patients' diabetes outcomes when in direct supervision of their care.

Methods: Our pharmacist-managed clinic functions as a referral system within a medical group for primary care related disease states. This study will include adult patients, 18 years of age or older, diagnosed with diabetes who have previously been or are currently under the care of the pharmacist. Patients who declined the referral or self-discontinued care with the pharmacist will be excluded. Once referred, the pharmacist will operate under a collaborative practice agreement to manage lifestyle and pharmacological changes specific to diabetes-related matters. Lifestyle management will focus on education regarding nutrition and physical activity, as well as goals of therapy. Scope of practice will also include making any necessary pharmacological changes such as medication adjustments (involving oral agents, injectables, and insulin pumps), initiation and adjustment of self-monitoring blood glucose practices, and implementation and interpretation of continuous glucose monitoring systems. We will monitor demographics, diagnosis information, time spent with the pharmacist, pertinent medications, and related laboratory parameters. Each patient's progress will be measured by a laboratory test of hemoglobin a1c. Progress will be tracked at baseline, periodically at follow-up, and at discharge from the clinic for referral back to the primary provider, if applicable.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 8-261

Poster Title: The incidence of high-risk patient readmission at a regional medical center following implementation of a transitions of care program by a community pharmacy

Primary Author: Jessica Lampley, Lipscomb University College of Pharmacy - Perkins Drugs, TN; **Email:** jllampley@lipscomb.edu

Additional Author (s):
Benjamin Gross

Purpose: Transitioning a patient from one setting is often complex. Factors include lack of communication between institutions, insufficient patient education and lack of knowledge about the patient's resources outside of the facility. Patient's lack of adequate medication education is a factor in patient's nonadherence to their medication regimens resulting in readmissions within 30-days post-discharge. This study will aim to assess the role that community pharmacists can play in educating high-risk patients with newly prescribed medication and the transitions of care process. This study also aims to highlight the potential value of this initiative as a clinical service in the community pharmacy.

Methods: A risk stratification tool, the LACE index, will be utilized to determine which patients are at an increased risk of readmission and recruited to participate in the study. Patients with a LACE score > 8 as well as a diagnosis of CHF, pneumonia, COPD, DM, MI, total knee/hip replacement, cardiac disease, coronary artery bypass graft, or Afib will be consented. Participants will have to agree to having their medications delivered to their bedside upon discharge.
After a participant consents to have their medication delivered to their bedside upon discharge, the hospital will send electronic prescriptions to Perkins Drugs, along with, their consent and discharge information 30 minutes prior to discharge. This information will include new medications, instructions, diagnoses, labs, and follow-up appointments. Medications will be filled and delivered to patient's bedside. The patient will be educated on each of the medications he or she is receiving and provided with an up-to-date medication list. The participant will agree to post discharge (within 48-72 hours) telecommunication, a one-on-one formal educational appointment with the investigator within 7-14 days post-discharge depending on their risk of readmission, and a final call at 25 days post-discharge.

Perkins drugs will also provide patient's primary care provider, specialist, and facility care manager with documentation of the discharge process, follow-up information, and updated medication list.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-262

Poster Title: Retrospective analysis of psychiatric emergency department visits and identifying opportunities for pharmacy involvement

Primary Author: Kayla Johnson, Maury Regional Medical Center, TN; **Email:** kayladjohnson42@gmail.com

Additional Author (s):
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Purpose: Patients with psychiatric conditions are admitted to the emergency department (ED) for a variety of conditions, including altered mental status, lack of medication adherence, and disease state exacerbations. Often, these patients must be held in the ED or admitted to the floor until placement at a psychiatric facility can be obtained. Due to limited formulary options, many patients may not be treated appropriately during this time period which may further worsen their original admission diagnosis. As the number of ED visits continues to climb, so does the need for clinical pharmacists in the ED who are familiar with psychotropic medications.

Methods: This study has been submitted to the Institutional Review Board and received approval. An evaluation of psychiatric patient holds or admissions in the ED will be conducted through a retrospective chart review utilizing the International Classification of Diseases, 10th edition (ICD-10) diagnosis codes of F01-99 (mental, behavioral, and neurodevelopmental disorders), G20-26 (extrapyramidal and movement disorders), and T39-43 and T50 (poisoning by, adverse effect of, and under dosing of substances). The following data will be collected: age, gender, county of residence, admitting diagnosis, length of stay (including holding), transferring facility, resumption of home psychotropic medications, and days until next ED visit, if applicable. Data from identified patients will be reviewed with the purpose of identifying average length of stay (holding), resumption of home medications, counties with highest visitation rates, and areas in which clinical pharmacists can assist in providing more complete care.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 8-263

Poster Title: Implementation of a pharmacist-led chronic obstructive pulmonary disease (COPD) medication management program in a rural community hospital

Primary Author: Shelby Hood, Maury Regional Medical Center, TN; **Email:** shelby.hood@pop.belmont.edu

Additional Author (s):
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Purpose: Chronic obstructive pulmonary disease (COPD) is a respiratory disease that is not fully reversible; however, symptoms associated with this disease can be treated and prevented if managed appropriately. Hospital thirty-day readmission rates for patients with chronic obstructive pulmonary disease are at an all-time high. These readmissions could potentially be prevented with proper lifestyle modifications and medication management. Pharmacists are in a unique position to provide services that help prevent these exacerbations. For this study an inpatient chronic obstructive pulmonary disease medication management program will be implemented by decentralized pharmacists to help reduce the recurrence of exacerbations and hospital readmissions.

Methods: This study has been submitted to the Institutional Review Board and received approval. A prospective cohort review will compare outcomes after the implementation of a pharmacist-led chronic obstructive pulmonary disease (COPD) medication management program. Pharmacists will perform patient interviews, full chart reviews, medication reconciliation, identify areas of need and barriers for individual patients, provide interventions, and make recommendations in collaboration with providers. Informed consent will be obtained by each patient prior to any involvement by the pharmacist. All patient identifiers will be excluded from the data presentation and only study investigators will have access to protected health information while on site at the hospital. The primary outcome will compare thirty-day hospital readmission rates for chronic obstructive pulmonary disease from the implementation of the program to before the program began. Secondary outcomes will include accepted recommendations by providers, potential cost savings, and length of hospital stay.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-264

Poster Title: Evaluating the difference in heart failure readmission rates between the cardiac floor versus general medicine floors in a regional hospital

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Purpose: Heart failure is the leading cause of hospitalizations, readmissions, and hospital costs in the United States. To combat this increasingly prevalent statistic, Maury Regional Medical Center (MRMC) began a pharmacist-led education program for heart failure patients throughout the cardiovascular floor. However, not all heart failure patients are admitted to the cardiovascular floor, and therefore do not receive education. The objective of this study is to evaluate the difference in heart failure readmission rates between the cardiovascular floor and the general medicine floors. This comparison will assess the need for expansion of this program to all inpatient medicine patients throughout MRMC.

Methods: The institutional review board approved this retrospective chart analysis to examine heart failure exacerbation readmission rates at MRMC. Once this readmission data is gathered, the difference in readmission rates between the cardiovascular floor versus the general medicine floors will be calculated to assess the need for expansion of pharmacist-led heart failure education on all inpatient medicine floors at MRMC. Patients will be identified using heart failure specific ICD-9 and ICD-10 codes. Patients age 18 and older with either a primary or secondary diagnosis of heart failure and with a heart failure exacerbation as reason for readmission from October 1, 2015, to September 30, 2016 will be included in this study. Patient demographics, days to readmission from initial hospitalization, as well as length of stay with will be analyzed. Subgroup analysis will include estimated cost savings.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Case Report

Session-Board Number: 8-265

Poster Title: Neuroleptic malignant syndrome secondary to quetiapine

Primary Author: Amie Algrim, Methodist Healthcare - University Hospital, TN; **Email:** amie.algrim@mlh.org

Additional Author (s):

Purpose: A 34-year-old male was admitted to the hospital with status tonic-clonic seizure activities and was found to have a right middle cerebral artery stroke. During admission, quetiapine 25 mg was administered three times per day. After administering the quetiapine, the patient was noted to have changes in mental status, laboratory abnormalities, intermittent fever with tachycardia and tachypnea. The patient's intermittent fever reached a maximum of 39.5 degrees Celsius with no definitive documented infection. The patient showed no response to three broad-spectrum antibiotics including vancomycin, meropenem, and linezolid. Multiple cultures from bronchoalvelar lavage, pleural fluid, sputum, urine and blood failed to reveal evidence for infection. Elevations of the serum creatinine kinase of 1361 IU/L due to rhabdomyolysis were also observed. The patient met diagnostic criteria for neuroleptic malignant syndrome. Quetiapine was immediately discontinued after twenty doses were given; intravenous hydration and supportive care were administered. The patient's condition resolved after receiving one dose of intravenous dantrolene sodium followed by 4 days of oral dantrolene sodium given twice a day. After the initiation of dantrolene sodium, the patient's cognitive impairment improved, along with his vital signs and laboratory abnormalities.
As this case report suggests, the use of quetiapine has the potential to cause life-threatening neuroleptic malignant syndrome. Twenty cases of quetiapine-induced neuroleptic malignant syndrome have been reported. In the few cases where quetiapine was the single agent, the mean dose was 267 mg per day. The observed core signs of neuroleptic malignant syndrome were hyperthermia and autonomic dysfunction. This case should serve as a reminder that atypical antipsychotics can be a cause of neuroleptic malignant syndrome.

Methods:

Results:

Conclusion:

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-266

Poster Title: System-wide evaluation of sugammadex use

Primary Author: Ashley Holmes, Methodist Healthcare - University Hospital - Germantown, TN; **Email:** ashleykholmes16@gmail.com

Additional Author (s):
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Purpose: Sugammadex, a selective relaxant agent that binds to unbound steroidal neuromuscular blockers to reverse neuromuscular blockade, was recently added to formulary at Methodist Le Bonheur Healthcare – Memphis Hospitals. The objective of this study is to conduct a medication use evaluation to characterize the use of sugammadex at Methodist, and to determine adherence to criteria and restrictions approved with the addition of sugammadex to formulary.

Methods: A Cerner PowerVision report will be utilized to identify adult patients who received sugammadex within the Methodist Le Bonheur Healthcare system. The following data will be collected: patient age, gender, weight, surgery type, pre-operative renal function, American Society of Anesthesiologists (ASA) physical status, use of hormonal contraception prior to surgery, neuromuscular blocker being reversed, time to extubation, post anesthesia care unit (PACU) time, and operating room (OR) time. Sugammadex dose and the use of other neuromuscular reversal agents including neostigmine and glycopyrrolate will be collected. Incidence of bradycardia, administration of blood products, administration of anti-emetics, and documentation of hypersensitivity to sugammadex will also be collected to evaluate the adverse effects associated with sugammadex use. All data will be recorded without patient identifiers and will be maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-267

Poster Title: Evaluation of a standardized indication specific ordering process for direct oral anticoagulants (DOAC) in a large academic health system

Primary Author: Rachel Howland, Methodist Healthcare University Hospital, TN; **Email:** rmh2636@gmail.com

Additional Author (s):
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Lauchland Roberts
Carrie Oliphant

Purpose: Based on previous medication use evaluations (MUE), it was identified that indication specific order sentences may improve appropriate dosing at our healthcare facility. As a result, in August 2016, new ordering sentences for the direct oral anticoagulants (DOAC) were introduced to ensure correct dosing for each labeled indication and reduce prescribing errors. The objectives of this study are to characterize the current utilization of DOACs, evaluate appropriateness of dosing using pre-built orders based on indication and compare these results to previous MUEs. Additionally, this study will evaluate injectable anticoagulant use and ensure appropriate transitions and lack of concomitant use.

Methods: The electronic medical record system will be utilized to identify patients who have received a DOAC (apixaban, dabigatran, edoxaban, or rivaroxaban) during admission to a Methodist – Le Bonheur adult Hospital between October 1st and October 31st 2016. Up to 100 patients will be included in this analysis. The following data will be collected: patient demographics, serum creatinine and creatinine clearance, DOAC indication, dose and frequency, potential drug interactions documented in the medication administration record (MAR), and any heparin or low molecular weight heparin use during a 24 hour period before or during DOAC use. If a patient received more than one DOAC, the agent that the patient was prescribed on the day of discharge will be analyzed. Data will be reviewed to assess appropriate dosing of each agent based on renal function, age, weight, drug interactions, and indication. Records will also be reviewed to determine if the indication specific ordering sentence was used and if the documented indication noted in the history and physical or discharge summary

matches the selected order. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-268

Poster Title: Lithium toxicity treatment: Analysis of adherence to proven therapeutic modalities

Primary Author: Hannah Hewgley, Methodist Healthcare-University Hospital, TN; **Email:** hannahhewgley@gmail.com

Additional Author (s):
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Jessica Rivera

Purpose: Lithium is used to treat bipolar disorder and has a complex mechanism of action that is not fully understood. Lithium is a simple cation that is primarily excreted as unchanged drug in the urine and has a narrow therapeutic window. Lithium toxicity can be acute, acute-on-chronic, or chronic. Signs of lithium toxicity can vary and often present as gastrointestinal (GI) symptoms, neurologic manifestations, and even Diabetes Insipidus in chronic toxicity. Proven treatment modalities include IV fluids and dialysis. The purpose of this study is to determine the appropriateness of lithium toxicity treatment in one healthcare system.

Methods: This is a quality improvement project based on retrospective data from a single healthcare system. This study will be submitted to the appropriate Institutional Review Board for approval. Patients with supratherapeutic lithium levels (lithium levels > 1.5 mEq/L) will be identified by a report run in Cerner Millennium. Patient demographics that will be collected include age, gender, race, height, and weight. Toxicological data that will be collected include type of lithium taken (extended release versus immediate release), lithium dose (if known), and all serum lithium concentrations during the clinical encounter. Clinical laboratory data that will be collected include baseline serum creatinine, baseline blood urea nitrogen (BUN), baseline serum sodium, thyroid panels, and diabetes insipidus workup including urine osmoles. Finally, the following therapeutic data will be obtained: IV fluids given, IV fluid rate, time to IV fluids, time to nephrology consult (if consulted), if dialysis was done, time to dialysis, type of dialysis, and if repeat levels were obtained after dialysis. We will also collect the following signs and symptoms of lithium toxicity from provider documentation: altered mental status, gastrointestinal symptoms, abnormal vital signs, abnormal electrolytes, seizures, acute kidney injury, neuromuscular symptoms, slurred speech, and other. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/a

Conclusion: N/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 8-269

Poster Title: Assessing compliance with calcitonin restrictions

Primary Author: Samarth Shah, Methodist University Hospital, TN; **Email:** samarthpshah31@gmail.com

Additional Author (s):
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Purpose: At Methodist Healthcare, calcitonin injection is on formulary, but it is reserved for patients who have severe or symptomatic hypercalcemia. While calcitonin has a quicker onset of action, tachyphylaxis with calcitonin is a known phenomenon that has been described to occur after 48 hours of usage. Electronic prescribing restrictions through the auto-population of a form were employed in 2015 due to the substantial increase in price for calcitonin. This medication use evaluation will assess system–wide compliance of the calcitonin restrictions with regard to utilization, effectiveness, and cost.

Methods: A retrospective chart review of patients that received calcitonin intramuscularly or subcutaneously throughout our hospital system was performed. The methodology was approved by the University of Tennessee Institutional Review Board. The time frame for the two groups collected were January 1st 2015 to February 28th 2015 for Group A (2015) and January 1st 2016 to February 29th for Group B (2016). A total of 35 calcitonin orders were screened in 2015 with 30 total occurrences being included from our hospital system. Patients were excluded if calcitonin was ordered and not subsequently administered. A total of 30 calcitonin orders were screen in 2016 and all 30 occurrences were included for analysis. Calcitonin was restricted to patients with severe or symptomatic hypercalcemia. The definition of hypercalcemia for this evaluation was an ionized Ca of greater than 1.5 mmol/L or total/corrected Ca of greater than 13 mg/dL. Documentation of typical symptoms for hypercalcemia was utilized in this evaluation. Doses were restricted to 4 units/kg for two doses which necessitated a reassessment for the continued need for calcitonin. Patients could receive additional calcitonin at 4 units/kg for two more doses to allow for a maximum of four doses in 48 hours. Outcomes assessed were total vials that were used as well as differences in calcium reduction between the two groups.

Results: The recommended dosing for calcitonin is 4 units/kg every 12 hours. Based on the data provided, the average dose of calcitonin for 2015 and 2016 was 3.4 units/kg. Only 15 patients were started on the appropriate dose in 2015 with the patient number increasing to 19 patients in 2016. The average number of doses given per order was 6.3 in 2015 compared to 2.4 in 2016. There were 17 patients that received more than 4 doses before implementation of the form compared to 4 patients post-implementation. Clinical outcomes that were reviewed included concomitant therapy, average change in serum Ca, and length of stay. Similar rates of Ca reduction were seen between the various treatment modalities. The average serum Ca at the time of therapy initiation was 13.39 and was reduced by 1.48 in 2015. In 2016, the average serum Ca at the time of therapy initiation was 13.68 and was reduced by 1.24. The average length of stay was higher in the 2015 group, but was due to 3 patients having an extended length of stay.

Conclusion: Of the patients evaluated, 93 percent of patients met at least one of the criteria based on current prescribing restrictions compared to 90 percent in 2015. Through analyzing the documentation of prescribing restrictions in both groups, we were able to determine appropriate usage of calcitonin. The number of patients receiving calcitonin remained unchanged, but the number of doses administered per patient reduced substantially. Due to implementation of the form and prescribing restrictions, the number of units dispensed over a two month period decreased from 46,669 units to 20,267 units. This prescribing reduction led to a decrease in 63 vials between 2015 and 2016 during these 2–month time frames. Converting the decrease in vials used to dollars saved, this two month comparison saved our hospital system 135,000 dollars. Extrapolating this data over a 12 month period, we would be on track to save approximately 810,000 dollars.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-270

Poster Title: Effect of tissue plasminogen activator administration on international normalized ratio (INR) in patients with acute ischemic stroke

Primary Author: Kimberly Davidson, Methodist University Hospital, TN; **Email:** erin.davidson2@mlh.org

Additional Author (s):
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Whitney Gross
Samarth Shah
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Purpose: The most serious complication of tissue plasminogen activator (tPA) administration is symptomatic intracranial hemorrhage. Monitoring of coagulation factors before and after tPA administration is warranted to observe if patients are at higher risk of bleeding. However, tPA may falsely elevate the international normalized ratio (INR), making monitoring for increased risk of bleeds difficult. The purpose of this study is to determine the relationship between tPA administration and INR elevation within 24 hours of tPA.

Methods: This study will be submitted to the appropriate Institutional Review Board for approval. Patients who received tPA for acute ischemic stroke will be identified by a report run in Cerner Millennium. Subsequently, patients will be screened for baseline INR measurement and INR within 24 hours of tPA. The following other data will be collected: hospital arrival time, tPA dose and time, baseline INR, any follow up INR, fibrinogen levels and the times of these measurements. Past medical history including the use of aspirin and/or antiplatelets, tobacco use, atrial fibrillation, hypertension, diabetes mellitus, and liver disease will be collected. We will also collect baseline liver function tests and initial National Institutes of Health Stroke Scale (NIHSS) measurements, any neurological intervention performed, and adverse outcomes including symptomatic intracranial hemorrhage (sICH), or other bleeding complications. Finally, we will collect basic patient demographics, age, gender, race, height and weight. Patients will be excluded for missing baseline INR, missing follow up INR within 24 hours of tPA, known baseline liver disease or taking any medications that would otherwise elevate INR. Patients with

follow up INR's within 24 hours of tPA will be analyzed to determine if there is an association of elevated INR with administration of tPA.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-271

Poster Title: Evaluation of Alerts that Fire with Therapeutic Duplication Checking

Primary Author: Jared Heiles, Methodist University Hospital, TN; **Email:** jared.heiles@mlh.org

Additional Author (s):
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Lauchland Roberts
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Purpose: Electronic health records with computerized provider order entry (CPOE) and clinical decision support have been adopted by many healthcare facilities. These systems have been shown to increase patient safety and decrease medication errors. However, increased duplicate order entry is an unintended consequence that has been well documented after implementation of CPOE. Therapeutic duplication checking is one strategy used to reduce duplicate medication orders. Therapeutic duplication checking in CPOE for select medication categories was implemented in 2016 at Methodist LeBonheur Healthcare. The purpose of this project is to evaluate therapeutic duplication checking alerts in our hospital system.

Methods: This study will evaluate alerts that fired upon order entry to healthcare providers for therapeutic duplication of medications. A report of all duplicate orders that triggered an alert to fire will be generated from the electronic medical record system and placed in an Excel spreadsheet. Alerts will be quantified for July and September 2016, and data from the report will include: duplicate medication order, medication that triggered the duplicate order, ordering personnel, override reason, medication therapy changes, and medication orders part of a Powerplan. This study will determine whether the duplicate alert prompted the prescriber to make a change in medication therapy. In addition, the following will be identified: medications that triggered the majority of duplicate alerts to fire, duplicate alerts that fired from medications that are part of a Powerplan, the top three medication categories that prompted prescribers to make a change in therapy , the most common reason indicated for overriding therapeutic duplication alerts, the percentage of alerts where no override reason was selected, and the top medication categories that would have fired if therapeutic

duplication checking was turned on for those categories. All data will be reported without patient identifiers and will maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-272

Poster Title: Evaluation of the use and management of peripheral parenteral nutrition within a healthcare system

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Purpose: Peripheral parenteral nutrition (PPN) is often used as an alternative to central parenteral nutrition, but there are fewer guidelines on proper administration and management. The purpose of this evaluation is to assess the appropriateness of PPN initiation and administration within a healthcare system.

Methods: A retrospective chart review of all adult patients who received PPN between January 1, 2016 and June 30, 2016 will be conducted. Patients eligible for study inclusion will encompass all adult hospitals within the healthcare system. Data points collected will include patient demographics such as age, height, weight, race and sex, along with the indication and duration of PPN therapy. Adverse events that may be attributable to the use of PPN, such as electrolyte disturbances, glucose abnormalities, or extravasation events, will also be documented. Data obtained from the medical record will be recorded on a standard data-collection form and encrypted using a randomly assigned patient number. During data analysis, these patient numbers will be dropped, ensuring the confidentiality of all subjects. Endpoints that will be assessed include appropriate initiation of therapy, adverse events that may be a result of PPN, and average length of hospital stay.

Results: n/a

Conclusion: n/a

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Case Report

Session-Board Number: 8-273

Poster Title: Mortality from a case of metformin associated lactic acidosis with a severely elevated metformin level

Primary Author: Heidi Riha, Methodist University Hospital, TN; **Email:** heidi.riha@mlh.org

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Purpose: Metformin associated lactic acidosis (MALA) is characterized by acidosis (pH < 7.35) and elevated lactate (>5 mmol/L). It occurs in a small percentage of patients taking metformin (0.03 to 0.06 per 1,000 patient-years), however, is associated with a high mortality. This case illustrates a patient on chronic metformin therapy with a severely elevated metformin level and lactic acidosis who had rapid clinical deterioration despite aggressive supportive care which resulted in death. The patient was a 58 year old African American female who presented from an assisted living facility with altered mental status. The patient had a past medical history of polysubstance abuse, schizophrenia and diabetes mellitus. The facility stated that they provided a daily dose of her medications and there was nothing unusual in her possession. She had no visitors, had not gone anywhere, and was acting normal that morning except for her breathing was a little off and she exhibited vomiting and diarrhea for one day. The patient was taking tiotropium 18 mcg inhalation daily, omeprazole 20 mg by mouth (PO) daily, metformin 1000 mg PO twice daily, insulin glargine 10 units subcutaneously nightly, ibuprofen 600 mg PO three times daily as needed for pain, hydrochlorothiazide-lisinopril 12.5-10mg PO daily, fluphenazine 10 mg PO at bedtime, and benztropine 1 mg PO twice daily. Upon arrival to the emergency department the patient was hyperventilating, cool to the touch, hypoglycemic (blood glucose 68 mg/dL), and hypotensive (blood pressure 64/43). Computed tomography without contrast of the head and chest x-ray were unremarkable. The patient was immediately intubated, and given 1 ampule of 50% dextrose intravenously (IV), normal saline 2 liters IV, vancomycin 1500 mg IV and piperacillin/tazobactam 3.375 g IV. Labs indicated the following were elevated: hemolyzed potassium (5.7 mEq/L), blood urea nitrogen (93 mg/dL), creatinine (12.00 mg/dL), anion gap (38), ammonia (194 mcmol/L), beta-hydroxybutyrate (6.09 mmol), serum osmolality (363 mOsm/kg), lactate (16.6 mmol/L), white blood cell (29.00 thousand/microliter), and INR (1.7). She had severe hypobicarbonatemia (bicarbonate 3 mEq/L), and acidosis (pH 6.69). Lactated ringers 2 L IV was given and a norepinephrine infusion was initiated. Due to refractory

hypotension and acidosis, she was given the following throughout her 4.5 hour hospitalization: sodium bicarbonate 150 mEq IV push, a bicarbonate infusion, vasopressin 0.04 units/min, hydrocortisone 50 mg IV and an epinephrine infusion. Unfortunately, the patient's condition worsened rapidly and underwent four rounds of cardiopulmonary resuscitation with return of spontaneous circulation each time. The patient was ultimately made a do not resuscitate due to poor prognosis and passed. A comprehensive toxicology urine drug screen was performed (through Quest Diagnostics) and was negative except for detection of cotinine (nicotine metabolite) and acetone 7 mg/dL. A metformin level was drawn in the early afternoon and sent out due to the possibility of MALA and resulted later as 35 mcg/mL (therapeutic level: 1-2 mcg/mL and levels associated with MALA >5 mcg/mL). The following laboratory parameters were checked and found to be non-contributory: thyroid stimulating hormone, creatinine kinase, salicylates, iron, ethylene glycol, methanol, and isopropanol. Urine and blood cultures had no growth to date. This patient had many causes of anion gap acidosis excluded, increasing the likelihood she had MALA. Additionally, she had a severely elevated metformin level from chronic metformin therapy with severe renal injury. Metformin levels in the literature are inconsistently reported. There is not a clear consensus on levels associated with MALA or mortality resulting from MALA. In this example, severely elevated metformin levels were associated with a MALA case which resulted in rapid deterioration despite supportive care and mortality.

Methods:

Results:

Conclusion:

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Evaluative Study

Session-Board Number: 8-274

Poster Title: Rifaximin does not improve outcomes in cirrhotic patients with systemic inflammatory response syndrome

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Additional Author (s):
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Purpose: Cirrhosis marks the final stage of chronic liver disease (CLD) and is accompanied by a host of serious complications. Evidence suggests that systemic inflammation and the activation of the systemic inflammatory response syndrome (SIRS) are independently associated with in-hospital mortality and portal hypertension-related complications (PHRC). Recent literature theorizes that rifaximin may alter the inflammatory process leading to these devastating consequences. The purpose of this study is to evaluate the impact of rifaximin on hospital outcomes in cirrhotic patients meeting SIRS criteria.

Methods: A retrospective review of patients admitted to Methodist LeBonheur Healthcare adult hospitals between 8/2008-8/2015 was conducted in reverse chronological order. Inclusion criteria: age>18 years, ICD9-codes for CLD, and admission >24 hours. Exclusion criteria: admission for liver transplant, hepatocellular carcinoma, transition to hospice, and incomplete data points. Patient groups: RP (rifaximin prior to hospitalization) or NRP (no rifaximin prior). The rate of in-hospital mortality based on grade of SIRS criteria (< 2 or ≥2 criteria) and MELD score as well as the development of PHRC were evaluated between the groups.

Results: Of the 715 patients screened, 305 met inclusion criteria (RP equals 100, NRP equals 205). Baseline characteristics were similar between the groups with the exception of MELD score. In patients that received rifaximin prior, a significant difference for in-hospital mortality was observed in patients with SIRS less than 2 (13 percent RP, 1 percent NRP; p equals 0.03),

SIRS greater than or equal to 2 (23 percent RP, 9 percent NRP; p equals 0.03), and in patients with a MELD score of greater than 18 (23 percent RP, 9 percent NRP; p equals 0.01). No significant difference of in-hospital mortality was identified in the MELD less than or equal to 18 group (3 percent RP, 4 percent NRP; p equals 1). There was a significant difference observed in the PHRC of hepatic encephalopathy in patients with SIRS less than 2 (54 percent RP, 8 percent NRP; p equals 0.0001) and SIRS less than or equal to 2 (41 percent RP, 13 percent NRP; p equals 0.0001) as well as a significant difference in the incidence of hepatorenal syndrome in the SIRS greater than or equal to 2 group (11 percent RP, 2 percent NRP; p equals 0.01).

Conclusion: In our study, administration of rifaximin prior to hospitalization did not improve in-hospital mortality or the development of PHRC in cirrhotic patients; however, this result may be biased by the acuity of illness seen in the RP group. Further studies examining the relationship between early initiation of rifaximin and the inflammatory process in cirrhosis are needed.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-275

Poster Title: Medication adherence interventions to reduce readmission rates for patients with psychiatric diagnoses

Primary Author: Patrycia Leja, Parkridge Medical Center, TN; **Email:** patrycialeja@gmail.com

Additional Author (s):

Purpose: Research in the scope of medication compliance for the psychiatric patient population has proven to have many barriers. Current research has focused on team management, patient education, and supporting patients as they transition to outpatient care. Studies have found conflicting results on efficacy of these interventions. The aim of this study will be to evaluate the reduction of readmission rates for psychiatric patients with schizophrenia, bipolar or psychosis based on pharmacist interventions.

Methods: Patients will be interviewed at discharge and upon readmission to discuss ways to be successful with their antipsychotic medication regimens. These patients will be counseled on compliance strategies and how to overcome barriers. Insurance programs or vouchers will be found through the hospital's utilization review team to find the optimal program for patients. Additional resources will be given to indigent patients or those that require extra support. These interventions will be categorized to determine whether they are successful.

Results: Study in progress.

Conclusion: Study in progress.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-276

Poster Title: Decreasing antibiotic time to administration through pharmacy interventions and hospital education

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Purpose: Currently, literature shows that administering now doses of antibiotics improves patient outcomes in morbidity and mortality. However, due to various reasons, these doses are not always given on time, which may worsen patient health outcomes and prolong hospital stay. The primary aim of this study is to evaluate antibiotic time to administration before and after pharmacy intervention and hospital education.

Methods: A retrospective review will be conducted on the metrics that Hospital Corporation of America (HCA) headquarters maintains on antibiotic administration for our hospital. The retrospective review will be conducted prior to pharmacy interventions and hospital education. After pharmacy interventions have been implemented and education has been conducted, a prospective review of the metrics will be conducted to assess for a decrease in antibiotic time to administration. These metrics will assess for delays in antibiotic time to administration in specific areas of the hospital.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 8-277

Poster Title: Evaluation of Computerized Physician Order Entry Alerts through a Medication Clinical Decision Support Committee to Counteract Alert Fatigue

Primary Author: Ryan O'Neal, PGY2 Health System Pharmacy Administration, TN; **Email:** ryan.oneal@mlh.org

Additional Author (s):
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Purpose: Computerized physician order entry has made a significant impact on medication error reduction. Therapeutic duplication, drug-drug interaction, dose range checking, allergy, as well as other alerts have the ability to verify medication orders based on the patient's medical record. As alert frequencies increase to the provider, the development of alert fatigue has the potential to lead to a medication error. One strategy to counteract the development of alert fatigue is to evaluate alerts for meaningfulness. Methodist LeBonheur Healthcare has developed a Medication Clinical Decision Support Committee to evaluate common alerts and requests by providers for modifications to alerts firing.

Methods: The Medication Clinical Decision Support Committee was created in July 2015 with membership of physicians, pharmacists, and information technology support. The committee is responsible for evaluating alerts that fire to providers upon medication ordering including alerts for therapeutic duplication, drug-allergy, drug-drug interaction, and dose range checking alerts. The committee reports to the System Medication Safety Committee at Methodist LeBonheur Healthcare, which reports their meeting minutes to the Methodist LeBonheur Healthcare Pharmacy and Therapeutic Committee monthly. Alerts are evaluated by the committee based on priority, request by physician, or frequency during a seven day period. A pharmacy representative provides a recommendation for each alert based on alert data built in computerized physician order entry and evidence-based practice. The Medication Clinical Decision Support Committee meets every other week to discuss alerts and recommendations. All recommendations approved through the committee are changed by the information technology support team and re-evaluated based on frequency. The meetings are held virtually using a webinar platform equipped with screen sharing and conference call capabilities. The

presentation consists of a review of previous meeting minutes, alert presentation and recommendation, and a pharmacy IT report. The pharmacy IT report provides the alert rates, alert rate trends, and top ten adult and pediatric alerts during a seven day period for dose range checking and duplication alerts.

Results: The Medication Clinical Decision Support Committee has met every two weeks since July 2015. Multiple improvements have been made to reduce the frequency of alerts, while maintaining the meaningfulness and safety of the alert. In December 2015, the committee acknowledged a 53% reduction in intravenous morphine alerts, a 95% reduction in intravenous diltiazem alerts, 82% reduction in epoetin alfa alerts, and 73% reduction in one-time intravenous levetiracetam alerts. In February 2016, the committee reduced intravenous vancomycin dose range checking alerts by 91%. The committee has reduced dose range checking alerts by half since July 2015. Based on successes from dose range checking additional alert actions were submitted for evaluation by the committee. In February 2016, dose range checking for the discharge prescription writing process and therapeutic duplication checking was implemented. The classes of medications activated for therapeutic duplication were anticoagulants, angiotensin-converting-enzyme inhibitors, angiotensin receptor blockers, statins, beta-blockers, and beta-lactam antibiotics. Other therapeutic duplication alerts for opioids, selective serotonin reuptake inhibitors, and tricyclic antidepressants have been implemented, in addition to clinical rules to help meet Leap Frog recommendations.

Conclusion: The Medication Clinical Decision Support Committee has been a vital group to tackle alert fatigue at Methodist LeBonheur Healthcare. The committee has made a significant impact on reducing alerts while maintaining patient safety. Due to the success of the committee, other provider alerts have been implemented to alert the provider in an effort to improve patient safety and comply with criteria for Leap Frog.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-278

Poster Title: Identification of risk factors for venous thromboembolism (VTE) in patients with thermal and inhalation injury

Primary Author: Tracy Whitney Brown, Regional One Health, TN; **Email:** thandler@regionalonehealth.org

Additional Author (s):
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Purpose: Critically ill patients are at a higher risk for developing venous thromboembolism (VTE). Thermal and inhalation injuries augment standard critical care risk with hypercoagulopathies, an overwhelming inflammatory response, and potential direct endothelial damage. It is unclear whether burn patients have higher rates of symptomatic VTE. Clarity is needed to determine if VTE incidence and associated complications balanced with bleeding necessitate initiation of chemoprophylaxis. Scoring systems for VTE risk in burn patients have been created based on national data. This study was conducted to determine incidence and identify potential risk factors for VTE in thermal and inhalation injury in our institution.

Methods: This study was performed in a single, southeastern United States burn center. It was an institutional review board approved, retrospective, observational study that utilized data collected from the institution's electronic medical record. All patients admitted with a thermal injury or an inhalation injury from January 1, 2000 to July 31, 2015 were included. Patients were excluded if they were less than 18 years of age or had incomplete data. SigmaPlot 11.2 was used for data analysis. Univariate analysis was used to compare patients with and without VTE. Independent variables with a $p \leq 0.1$ were included in a multivariable logistic regression. During regression modeling, $p < 0.05$ was considered significant. Nominal data were analyzed by chi-square test. Continuous variables were compared using either Mann-Whitney U test or t-test, depending on normal distribution. Shapiro-Wilk test was used to test for normal distribution.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-279

Poster Title: Development and implementation of an antibiotic prescribing pathway in the critically ill burn patient

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Additional Author (s):
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Purpose: Infections are a frequent occurrence in patients with thermal injuries secondary to a compromised immunologic barrier. Timely and accurate diagnosis of infection in critically ill burn patients can be difficult as these patient have a hypermetabolic and proinflammatory presentation at baseline. Prompt evaluation and administration of appropriate antibiotics is necessary to reduce exposure, decrease resistance, and reduce mortality. The purpose of this process was to develop an antimicrobial prescribing pathway in the critically ill burn patient.

Methods: We developed a protocol for use in the Firefighters Burn Center that uses clinically accepted methods of diagnosis along with our local antibiograms to streamline the diagnosis of infection, collection of cultures, prescribing of empiric antibiotics, and early conversion to definitive antimicrobial therapy. This protocol is being implemented and evaluated to determine its effect on early and accurate diagnosis of infection and subsequent prescribing of antibiotics.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-280

Poster Title: Use of technology to assess the accuracy of anesthesia dosing and drug administration in the operating room

Primary Author: Megan Hicks, Regional One Health, TN; **Email:** drmeganhicks@gmail.com

Additional Author (s):
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Purpose: Historically, very little data has been reported regarding medication errors in the operating room. Operating rooms typically lack medication safety checks, such as barcoding or system double-check. High rates of perioperative medication errors have been reported, and adverse events attributed to perioperative medication errors have been shown to increase hospital costs and length of stay. New technology has recently been introduced to incorporate medication safety measures in the operating room and to assist anesthesia practitioners with the administration of medications. The objective of this study is to assess the accuracy of self-reported perioperative medication dosing errors utilizing advanced barcoding technology.

Methods: The study will be submitted to the Institutional Review Board for approval. The surgical patient information system will identify patients who receive medications during operating procedures in an outpatient surgery center. Data collected will include type of procedure performed, outpatient surgery clinic performing procedure, perioperative medication(s) given, medication doses given as reported by anesthesiology or nurse anesthetist, medication doses given as reported by advanced barcoding technology, and reported adverse drug events. All data will be recorded without patient identifiers and maintained confidentially. A medication error will be defined as a difference between self-reported medication doses and technologically-documented. The primary outcome of the study will be to compare incidences of self-reported medication errors and medication errors detected by technology.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-281

Poster Title: Use of Pharmacist-Assisted Health Regimen in Patients with Elevated HbA1c: Effectiveness on Decreasing Elevated HbA1c Percentages.

Primary Author: Krista King, South College School of Pharmacy, TN; **Email:** kingkm3@gmail.com

Additional Author (s):
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Purpose: The objective of this study is to evaluate the effectiveness of using of a standardized patient health regimen on patient HbA1c. This study will utilize a pharmacist-assisted diet and exercise regimen with company employees identified as having a baseline HbA1c greater than 6.5%, with a goal to reduce this number.

Methods: This is an exploratory pilot study. The participants of this study are employees of a national grocery chain with in-house pharmacy services who had a biometric screening performed between July 1st and September 30th, 2016. Screenings took place at one of the company's pharmacy locations in the southeastern United States. The biometric screenings included blood glucose, blood pressure, body mass index, and total cholesterol. Patients with a HbA1c of greater than 6.5% will be offered a pharmacist-assisted patient health regimen. Collection of data will be obtained through the A1c Now™ point-of-care screening device for the pre- and post-HbA1c value at one of the company's locations. The time interval between the pre and post screening will be 90 days. Additional data collection will be throughout the 90 days with a phone call or email to assess adherence to the regimen. The primary end point will be defined as a decrease in the post-HbA1c value from the pre-HbA1c value.

Results: N/A

Conclusion: Favorable results would indicate the benefit of further research into the utilization of this pharmacist-assisted approach to reducing overall HbA1c values and improving patient quality of life.

Expanding the role of a pharmacist within a patient-centered framework, pharmacists are able to partner with patients and aid in their decision making toward their healthcare goals.

Submission Category: Oncology

Submission Type: Evaluative Study

Session-Board Number: 8-282

Poster Title: Thiopurine methyltransferase genotyping compliance to guide thiopurine dosing and improve patient safety in acute lymphoblastic leukemia patients

Primary Author: Jennifer Hockings, St. Jude Children's Research Hospital, TN; **Email:** jennifer.hockings@stjude.org

Additional Author (s):
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Purpose: Thiopurines are a main component of treatment in acute lymphoblastic leukemia (ALL) regimens. Thiopurine methyltransferase (TPMT) is an enzyme that methylates and inactivates thiopurines. Polymorphisms within TPMT result in a loss of enzymatic activity and have been associated with severe myelosuppression and thiopurine intolerance. Based on these data, the goal at St. Jude Children's Research Hospital is to obtain a TPMT (3 variants) genotype on every patient with a diagnosis of ALL before thiopurine therapy is initiated as a method to maximize efficacy while minimizing adverse effects.

Methods: A retrospective review was conducted to determine the percentage of patients who had a TPMT genotype in the electronic health record (EHR) at the time a thiopurine order was placed. At St. Jude, most ALL therapy order sets include a TPMT genotype order in the first days of induction therapy in order to obtain the result in time to guide thiopurine dosing. In addition, pre-test clinical decision support (CDS) alerts have been created to recommend ordering a TPMT genotype in the event that a thiopurine is prescribed to a patient who has not been genotyped for TPMT, as well as post-test alerts that suggest thiopurine dose modifications in patients with a known high-risk TPMT phenotype. Patients were included if they were diagnosed with ALL, were thiopurine-naïve prior to treatment initiation at St. Jude, and received their first dose of thiopurine between October 2012 and December 2015. Patients were excluded if they had received an allogeneic hematopoietic stem cell transplant prior to starting the first dose of thiopurine. EHRs of patients who did not have a documented TPMT genotype prior to an initial thiopurine order were reviewed to determine potential reasons for

lack of TPMT genotyping compliance. Once routine data collection procedures are established, the percent of ALL patients genotyped for TPMT prior to initiating thiopurine therapy will be established as a routine medication safety metric.

Results: A total of 299 thiopurine-naïve patients with ALL were identified. A TPMT genotype was documented in the EHR prior to thiopurine initiation for 297 (99%) patients. Two patients did not have a documented TPMT genotype prior to the entry of thiopurine orders. The first patient was on an ALL protocol in which the dose of 6-mercaptopurine was low (25 mg/m2/day), and the clinician ordered a TPMT genotype on day 1 of 6-mercaptopurine therapy. The second patient received standard doses of thioguanine through a non-protocol treatment plan that did not include a TPMT genotype order in the order set. A TPMT genotype was obtained within the first 4 weeks of therapy initiation. Both instances prompted process changes to prevent such exceptions from happening in the future. Overall, 265 (88%) patients were predicted to be TPMT normal metabolizers, 32 (11%) patients were predicted to be TPMT intermediate metabolizers and 2 (1%) patients were predicted to be TPMT poor metabolizers in this cohort.

Conclusion: The use of both active CDS alerts and passive guidance through order sets ensures that the majority of patients at St. Jude have a documented TPMT genotype test result available to guide initial thiopurine dosing. In establishing TPMT genotyping as a medication safety metric, our goal was set to have 100% of thiopurine-naïve patients with ALL genotyped for TPMT prior to initiating thiopurine therapy and to use the result to help guide initial dosing, and we found 99% compliance. We will continue to monitor compliance with this metric on a quarterly basis through incorporation in our hospital's medication safety scorecard.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-283

Poster Title: Antimicrobial stewardship of nitrofurantoin in the geriatric population

Primary Author: Erin Todd, TriStar Centennial Hospital, TN; **Email:** erin.todd@hcahealthcare.com

Additional Author (s):
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Purpose: The American Geriatrics Society's Beers Criteria gives a strong recommendation to avoid nitrofurantoin in patients greater than 65 years of age with renal impairment. The objective of this drug-use evaluation is to determine if nitrofurantoin is appropriately prescribed to patients greater than 65 years old at a single, large acute care hospital facility.

Methods: This study has been submitted to the Institutional Review Board for approval. A drug-use evaluation study has been selected to improve antibiotic use and safety within the geriatric population, focusing on nitrofurantoin prescribing. In order to complete this study, the electronic medical record system will identify patients who are greater than 65 years old and received nitrofurantoin. The following data will be collected: patient age, urinary infection specific findings, renal function values, prescribed dose and duration of nitrofurantoin, days to re-admission, re-admission infection and signs of nitrofurantoin toxicity at re-admission, if applicable. Data will be recorded and analyzed without patient identifiers and maintained in a confidential manner. The data collected will be reviewed by a resident pharmacist and an infectious-disease clinical pharmacist. These investigators aim to identify opportunities to improve geriatric care and antimicrobial stewardship with the evaluation of nitrofurantoin's prescribed use in the geriatric population. This evaluation will not only improve geriatric care within the facility, but contribute to the limited antimicrobial stewardship data available for the geriatric population.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-284

Poster Title: Timing of first dose anti-infectives for patients in the emergency department

Primary Author: Erin Loncharic, TriStar Centennial Medical Center, TN; **Email:** erin.loncharic@hcahealthcare.com

Additional Author (s):
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Purpose: Timely administration of anti-infectives in the emergency department (ED) should be a priority for patient care in both septic and non-septic patients. Current sepsis guidelines and the Centers for Medicare and Medicaid Services (CMS) recommend broad spectrum antibiotics are administered to patients suspected of sepsis within three hours of presentation to ED triage. The objective of this study is to examine the process that occurs from when a prescriber orders an anti-infective in the emergency department to when it is administered to the patient in order to identify areas for improvement and optimization.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system and pharmacotherapy monitoring software will identify patients who presented to the ED and were administered an anti-infective. The following data will be collected: time of patient presentation/registration to the emergency department, time of anti-infective ordering by a prescriber, time of pharmacist order verification, time of medication delivery from pharmacy/time medication was removed from medication dispensing cabinet, and time of administration to patient. Additionally, if available in the patient's medical record, the following will be collected: patient's initial temperature, heart rate, respiratory rate, white blood cell count, if an initial lactate level was obtained, if blood cultures were obtained prior to anti-infective administration, and time of administration of crystalloid for fluid resuscitation (if given). Data collected will be reviewed to determine areas and procedures for improvement to minimize delay from patient presentation to anti-infective administration for both septic and non-septic patients.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-285

Poster Title: Enoxaparin for thomboprophylaxis in obese and underweight patients

Primary Author: Sarah Mehringer, TriStar Centennial Medical Center, TN; **Email:** sarah.mehringer@hcahealthcare.com

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Purpose: Inpatient deep vein thrombosis (DVT) prophylaxis is crucial to all patients because it prevents unnecessary complications, which are not reimbursed by third party payers. Enoxaparin is one of the most commonly used agents for pharmacological DVT prophylaxis. Enoxaparin must be adjusted for renal dysfunction, but limited data exists regarding the appropriate dosing of enoxaparin for DVT prophylaxis in both overweight and underweight patients. There is speculation that obese patients are often under-dosed, therefore posing a risk of thrombosis, while underweight patients may be over-dosed, posing a risk for bleeding.

Methods: We conducted a retrospective chart review including non-pregnant patients over 18 years old with a body mass index (BMI) greater than 40, greater than 120 kilograms, or less than 40 kilograms on enoxaparin for DVT prophylaxis. We excluded patients with renal dysfunction, cancer, atrial fibrillation, and clotting disorders. Our primary study endpoint is the occurrence of thromboembolic events or bleeding in patients treated with enoxaparin for DVT prophylaxis. Secondary endpoints included duration of therapy and length of stay. Data collection is currently in process, and will be completed prior to ASHP Mid-Year Clinical Meeting.

Results: NA

Conclusion: NA

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-286

Poster Title: A Medication Use Evaluation of Argatroban

Primary Author: Michael Allen, TriStar Centennial Medical Center, TN; **Email:** mjallen6216@gmail.com

Additional Author (s):
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Purpose: Heparin-induced thrombocytopenia (HIT) is an antibody-mediated adverse reaction to heparin administration. Argatroban is a non-heparin anticoagulant indicated for treatment of thrombosis in adult patients with HIT. The primary objective of this study is to evaluate the effectiveness of argatroban dosing protocol for patients with HIT at a 650-bed community hospital. The primary endpoint of the study will be time within the therapeutic PTT range, which will be a surrogate indicator of effectiveness of the protocol. Secondary objectives will be assessment of the time to therapeutic PTT range, time above the therapeutic PTT range, and adverse effects experienced by patients.

Methods: A single-center, retrospective chart review will be conducted for patients who were admitted and received an order for argatroban infusion for HIT. This study is pending approval through the University of Tennessee Institution Review Board. Eligible patients will be limited to patients 18 years of age or older suspected to have HIT who received argatroban during a several month period.
Data for each patient will be extracted from the patients' electronic health record (EHR) on a standardized data collection tool. Collected data will include age; gender; actual body weight; baseline PT/INR; baseline PTT; complete blood count (CBC); serum albumin; presence of ascites or hepatic encephalopathy; HIT antibody; serotonin release assay; blood pressure at initiation of infusion; medication orders for strong CYP3A4 inhibitors; status-post cardiac surgery; history of multi-organ failure; total bilirubin; initial rate of infusion; PTT results post infusion; and time of PTT results. From this data, we will then determine whether argatroban was initiated at the appropriate rate, whether PTT values were drawn at appropriate times, and the length of time the PTT was compliant with the goal range all defined by the hospital argatroban protocol.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-287

Poster Title: Clinical pharmacist impact on the reduction of intensive care unit (ICU) delirium: Intervention and monitoring

Primary Author: Myaa Lightfoot, Tristar Skyline Medical Center, TN; **Email:** myaa.lightfoot@hcahealthcare.com

Additional Author (s):
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Purpose: To determine the impact of pharmacy intervention on clinical outcomes related to intensive care (ICU) delirium

Methods: Retrospective analysis will be conducted on patients who were admitted to the trauma ICU for >24 hours and were flagged using special rules with CDS, a unique intelligent software that can monitor patient data in real time . CDS rules will be implemented based on ICU delirium specific risk factors gathered from previous studies such as: age, unrelieved pain, continuous use of sedation medication, + CAM-ICU score and large amounts of benzodiazepines used in 24 hours. This will serve as the control group. Data that will be collected from the control: ICU length of stay, ICU delirium +/-, RASS score, CAM-ICU scores, ventilator days, the use of sedation medication and antipsychotic medication. Modifiable risk factors will be gathered from the control group. CDS rules will then be used to identify currently admitted patients in the trauma ICU that would benefit from pharmacy intervention in the prevention of ICU delirium. Clinical pharmacist will monitor the flagged at risk patients and provide intervention recommendations as the the standard of care to prevent the development of ICU delirium.Possible interventions will be: recommending to decrease benzodiazepine use, wean trials for patients on ventilators and controlling pain as recommended by the guidelines. Before and after data will be analyzed to see if there was a positive change made by pharmacy intervention.

Results: Primary: The frequency of ICU delirium and ICU length of stay
Secondary: Ventilator days and hospital length of stay, antipsychotic use

Conclusion: Tristar Skyline Medical Center currently does not have an ICU delirium protocol in place, which leaves patients vulnerable to the development of ICU delirium. Pharmacy has a unique clinical decision support (CDS) software, that allows us to create relevant rules to follow patients with specific characteristics that are of interest. With CDS clinical pharmacist can be alerted to a patient who meets specific risk factors for developing ICU delirium. These patients will be followed by a clinical pharmacist to make appropriate recommendations about the care of the patient to improve their clinical outcome.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-288

Poster Title: Implementation of a pharmacy-led medication reconciliation program through pharmacy technicians in the emergency department

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Additional Author (s):
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Purpose: An accurate medication history upon arrival to a medical facility is essential for medication reconciliation to be completed by a patient's medical team. The purpose of this study is to evaluate the implementation of a pharmacy-driven medication reconciliation program in the emergency department of a 230-bed, designated level II trauma center. Proposed benefits include improved accuracy of admission medication histories and enhanced transitions of care.

Methods: Pharmacy technicians will participate in interactive lectures on the importance of accurate medication histories, high risk medications, common errors in medication histories, communication with patients, and documentation in the medical record. Technicians will then receive training by the Emergency Medicine Clinical Pharmacist and PGY-1 Pharmacy Practice Resident through demonstration, direct observation, and teach-back methods. Trained pharmacy technicians will complete admission medication histories on patients seen in the emergency department of TriStar Skyline Medical Center. Technicians will interview patients regarding their home medications and then utilize a second reference such as a patient's home pharmacy, physician office, nursing facility, etc. to verify accurate medication information. Technicians will document the final medication history into the electronic medical record for review by the supervising pharmacist. Data will be collected by comparing nursing-completed medication histories verses pharmacy technician-completed medication histories. The primary outcomes will be the number of errors and discrepancies discovered in the medication histories reviewed. Time required to complete an average medication history will also be recorded to evaluate cost effectiveness of pharmacy technician verses nursing-led medication histories.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-289

Poster Title: Impact of a quetiapine tapering guideline following admission in an intensive care unit

Primary Author: Kent Wilin, University of Tennessee Medical Center, TN; **Email:** kwilin@utmck.edu

Additional Author (s):
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Purpose: Quetiapine, an atypical antipsychotic, has seen significant use in intensive care units (ICUs) following the publication of the 2013 guidelines on pain, agitation, and delirium from the Society of Critical Care Medicine. Several studies have since demonstrated that patients started on antipsychotics in the ICU are frequently and inappropriately continued on them at discharge. The purpose of this study is to assess the impact of a quetiapine tapering guideline on new quetiapine prescriptions at discharge.

Methods: This quasi-experimental study has been submitted to the Institutional Review Board for approval. All patients that received quetiapine during admission to the Trauma/Surgical Critical Care and Neurocritical Care services will be screened for inclusion in the study. Exclusions will be made for patients taking quetiapine prior to admission, orders for quetiapine from a psychiatric service, patients who died before discharge, patients with incomplete documentation of study variables, and patients not discharged by study end-date. The primary endpoint of this study will be the incidence of new quetiapine prescriptions at discharge. Data that will be collected from electronic medical records includes: baseline demographics, admission unit, admission reason, comorbid conditions, Glasgow Coma Score on admission, APACHE II Score, ICU length of stay, hospital length of stay, initial dose of quetiapine, dose of quetiapine at discharge, incidence of active quetiapine order at ICU discharge, duration of active quetiapine order during hospital stay, incidence of requiring taper vs. immediate discontinuation of quetiapine, use of other antipsychotics, and adverse drug events. Statistical

tests to be used for analysis include Chi Square Test, Mann-Whitney U Test, and Student's t-test for nominal, ordinal, and normally distributed data respectively.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-290

Poster Title: Impact of pharmacist-assisted automatic discontinuation of unnecessary stress ulcer prophylaxis in non-critically ill hospitalized patients

Primary Author: Nichole Szczerbowski, University of Tennessee Medical Center, TN; **Email:** nszczerbowski@utmck.edu

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Purpose: Studies have shown that many patients are inappropriately initiated and continued on stress ulcer prophylaxis (SUP) when it is not indicated. The most recent SUP guidelines published in 1999 include criteria for SUP in critically ill patients and recommend against SUP in non-critically ill patients. Recent studies indicate that there are independent risk factors for stress ulcer development in non-critically ill patients which have been incorporated into a Stress Ulcer-Related Gastrointestinal Bleeding (SURGIB) risk score. The purpose of this study is to determine if a pharmacist-assisted, SURGIB-focused protocol will decrease the rate of unnecessary SUP use in non-critically ill patients.

Methods: This study is a single-center, retrospective cohort which evaluates the rate of unnecessary stress ulcer prophylaxis (SUP) in non-critically ill patients both pre- and post-pharmacist-assisted protocol implementation. Patients who are 18 years of age or older and are receiving a proton pump inhibitor (PPI), histamine-2 receptor antagonist (H2RA), or sucralfate will be included via lists generated from the pharmacy informatics department at University of Tennessee Medical Center. Exclusion criteria will include patients who are critically ill, taking SUP per gastroenterology recommendation, taking SUP as a home medication, receiving enteral feedings, taking scheduled non-steroidal anti-inflammatory medications, and/or being observed for chest pain. Bariatric surgery patients and patients with treatment indications for PPIs, H2RAs, or sucralfate will also be excluded. Data collection will include patient demographics, length of hospital stay, duration of SUP use, indications for SUP use, and use of specific SUP medications. The primary endpoint of this study will be the duration in days of unnecessary SUP use pre- and post-protocol implementation. Secondary endpoints will include the percentage of patients discharged on unnecessary SUP, prevalence of stress ulcers, prevalence of adverse

effects (pneumonia, Clostridium difficile infection), and cost associated with unnecessary SUP use.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-291

Poster Title: Evaluation of oral vancomycin dosing for severe complicated Clostridium difficile infection

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Purpose: Increased incidence and severity of Clostridium difficile infection (CDI) makes appropriate treatment crucial. Optimal dosing of enteral vancomycin in patients with severe, complicated CDI has not been specifically investigated. Both major American society guidelines recommend 500 mg of enteral vancomycin for the treatment of severe, complicated CDI. Despite this recommendation, evidence to support this dose is based on case reports and expert opinion. The objective of this study is to determine the most appropriate dose of enteral vancomycin (125, 250, or 500 mg four times a day) for the first occurrence of severe, complicated CDI.

Methods: Upon completion of Institutional Review Board approval, the electronic medical record will be utilized to identify patients who received enteral vancomycin for greater than or equal to 48 hours and had an ICD-9/ICD-10 diagnosis of CDI. Patients will be included if they are at least 18 years of age and meet the criteria for severe, complicated CDI. Severe, complicated CDI was defined according to Infectious Disease Society of America/Society for Healthcare Epidemiology of America guideline definitions, which include a white blood cell (WBC) count of at least 15,000 cells/µL or serum creatinine (SCr) of greater than or equal to 1.5 times the pre-morbid level or acute kidney injury plus any one of the following: hypotension, shock, ileus, or megacolon. Patients will be excluded if they have documented recurrent CDI or any baseline conditions that would influence the assessment of severe, complicated CDI criteria. The primary outcome being evaluated is time to clinical cure defined as the resolution of diarrhea (less than 3 unformed stools, 200mL of watery rectal bag output or 1 L of colostomy output in 24 hours). Secondary outcomes include 28 day mortality, recurrence and reinfection rates, readmission

rates, ICU and hospital LOS, discharge disposition, appropriateness of initial therapy based on CDI severity, and a composite endpoint of complications due to CDI.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-292

Poster Title: Initiation of a quetiapine taper order set for delirium in the intensive care unit (ICU)

Primary Author: Stefanie Underwood, University of Tennessee Medical Center, TN; **Email:** underwood864@gmail.com

Additional Author (s):
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Purpose: Current literature cites the prevalence of an atypical antipsychotic initiated for the treatment of ICU delirium being continued at ICU discharge to be 47 - 84.2 percent and 21 - 33.9 percent at hospital discharge. A retrospective study conducted at the University of Tennessee Medical Center from July 1, 2011 through June 30, 2012 in the trauma-surgical and neurocritical care units showed that 21 percent of patients were discharged on quetiapine therapy. The purpose of this study is to determine if an ICU delirium quetiapine taper order set decreases the incidence of patients being continued on quetiapine at hospital discharge.

Methods: This is a single-center, retrospective cohort conducted at the University of Tennessee Medical Center, which will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients. Inclusion criteria consist of patients with diagnosis of delirium, admitted to the critical care medicine service who received quetiapine for treatment. Exclusion criteria include patients with quetiapine as a home medication, died during hospitalization, or quetiapine therapy initiated for another indication. Data collection will include patient demographics, length of stay, primary physician team at discharge, comorbidities, quetiapine dosing regimen, length of stay, sedation medications while in the ICU, incidence of prolonged QTc, haloperidol use, and APACHE II scores. The primary outcome of this study is to determine the incidence of patients discharged from the hospital on quetiapine. The study design consists of two parts. Part one is a cross-sectional study that will establish the prevalence of quetiapine discharge at our institution between June 1, 2013 to September 26, 2016. Part two consists of initiating a quetiapine taper order set for ICU

delirium, establishing incidence of patients discharged on quetiapine between September 27, 2016 to June 1, 2017 and comparing the results to part one of the study. Secondary outcomes include protocol utilization, duration of quetiapine use and number of patients discharged from the ICU on quetiapine.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-293

Poster Title: Effect of a clinical decision support tool on outpatient antibiotic prescribing for uncomplicated urinary tract infections (UTIs) – Phase I

Primary Author: Alexandra Foster, University of Tennessee Medical Center, TN; **Email:** afoster@utmck.edu

Additional Author (s):
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Purpose: An update to the IDSA guidelines for treatment of acute uncomplicated UTIs was published in 2011. In light of increasing antimicrobial resistance, the FDA Drug Safety Communication in May 2016 on fluoroquinolone use in uncomplicated infections, and Tennessee Medicaid's value-based reimbursement system, assessment of outpatient prescribing and implementation of interventions to guide empiric therapy for uncomplicated UTIs are imperative to optimize treatment success, patient safety, and cost-effectiveness. The objective of this study is to identify trends in outpatient antibiotic prescribing practices for uncomplicated UTIs in a family medicine clinic and to evaluate adherence to current clinical practice guidelines.

Methods: Phase I is a cross-sectional study of non-pregnant female patients aged 18 years and older diagnosed with an uncomplicated UTI at an outpatient family medicine clinic between July 1, 2011 and April 30, 2016. Patients excluded are those with complicated and/or recurrent UTIs, use of prophylactic antibiotics for UTIs, concurrent sexually transmitted diseases, and chronic immunosuppression. Data collected from eligible patients' electronic medical records includes: date of visit, diagnosis, demographics, past medical history, allergies, presenting symptoms, renal function, urinalysis results, urine culture results, antibiotic prescribed, healthcare provider, insurance status, and re-presentation to an outpatient clinic or ED within 14 days of initial diagnosis. The primary endpoint is prescribing trends of antibiotics for uncomplicated UTIs. Secondary endpoints include the proportion of patients receiving appropriate empiric therapy, duration of therapy, and dose based on renal function; antibiotic

susceptibilities of uropathogens isolated from urine culture; prescribing trends of individual health care providers; and proportion of patients re-presenting to an outpatient clinic or ED within 14 days of diagnosis. Descriptive statistics will be utilized to describe the study population, as well as current prescribing rates of antibiotics for treatment of uncomplicated UTI. The Cochran Mantel-Haenszel Chi-square test will be utilized to assess trends in the prescribing of antibiotics between the different years. This study has been submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 8-294

Poster Title: Impact of pharmacist involvement in the discharge medication reconciliation process for inpatient rounding teams at an academic medical center

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Purpose: Discharge from the hospital is a complicated transition time and a time that is particularly susceptible to errors. Multiple observational studies have looked at the rate of discrepancies/errors in discharge medication reconciliation and found 20-50% of discharges may have some discrepancies. At our institution, pharmacists are involved in admission medication reconciliation and inpatient medication therapy but have no formal role in discharge medication reconciliation. The objective of this study is to determine impact of pharmacist involvement in the discharge medication reconciliation process for inpatient rounding teams at our academic medical center.

Methods: For this study, pharmacists rounding with the family medicine service will be directly contacted when the physician has completed a patient's discharge medication reconciliation Monday-Friday 7am to 4pm. Physicians will contact the pharmacist directly by pager system or telephone. Pharmacists will review the medication list and contact the physician if there are any discrepancies. Pharmacists will review the discharge medication list to compare the medications a patient is prescribed with newly ordered medications. The comparison addresses duplications, omissions, and interactions, and the need to continue current medications. All patients whose discharge medication reconciliation is reviewed by a pharmacist will be included in the intervention group. The control group will comprise of patients discharged by the family medicine service outside of the study hours or whose discharge medication reconciliation was not reviewed by the team pharmacist. The primary endpoint will be the incidence of pharmacist interventions on discharge medication reconciliations. Secondary endpoints will include category and severity of discrepancies identified, readmission rates, emergency department

visits, time taken for pharmacist review, and number of medications patient is taking on admission and discharge. To determine potential high risk groups, patients with heart failure, COPD, and diabetes, as well as those taking anticoagulants, insulin, or opioids will be identified.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-295

Poster Title: Effect of protocolized management of severe traumatic brain injuries on incidence of intracranial hypertension

Primary Author: Carly Stoneman, University of Tennessee Medical Center, TN; **Email:** carly.stoneman@gmail.com

Additional Author (s):
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Heath Many
Christy Lawson

Purpose: Traumatic brain injuries (TBIs) cause over 50,000 deaths annually in the United States with a significant burden on our healthcare system. Increased intracranial pressures (ICPs) above 20 mmHg have been shown to increase risk of mortality. Even if elevated ICPs are decreased, TBI patients are 2.2 times more likely to die than those who consistently have normal ICPs. Our institution began utilizing a protocolized approach for treating TBIs in July 2016 with more emphasis on ICP monitoring for severe TBIs. The objective of this study is to determine if standardized treatment of severe TBIs decreases the incidence of intracranial hypertension.

Methods: This study will be submitted to the Institutional Review Board for approval. The trauma registry will identify patients who were admitted with a diagnosis of severe TBI (Glascow Coma Scale of 8 or less) pre- and post-implementation of the TBI protocol at our institution. Patients treated prior to implementation of the protocolized approach to treatment of TBI will be matched to post-implementation patients based on Injury Severity Score (ISS) and mechanism of injury. Patients less than 18 years of age or those with severe TBIs who expired within 48 hours of hospital admission will be excluded. The following information will be collected: demographic information, incidences of elevated ICPs, cerebral perfusion pressure (CPP), use of hyperosmolar therapy, Glascow Outcome Scale, and Sequential Organ Failure Assessment (SOFA) score. The primary outcome will be incidence of elevated ICPs. Secondary outcomes will include incidence of CPP < 60 mmHg, use of hyperosmolar therapy, ICU and hospital length of stay, in-hospital mortality, days of mechanical ventilation, time to DVT prophylaxis, Glascow Outcome Scale, and compliance to the severe TBI pathway.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-296

Poster Title: Evaluation of pharmacist assisted auto-substitution of long acting inhalers to nebulized medications

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Additional Author (s):
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Purpose: Novel inhalers for the management of pulmonary/resipiratory diseases are gaining FDA approval rapidly. The large number of new inhalers has been challenging from a formulary management standpoint.. Many institutions are transitioning from maintenance inhalers to comparable nebulized medications for hospitalzied patients.
Current data on auto-substitution to nebulizers has shown theoretical cost savings analysis, but is limited on effects on patient outcomes. Our objective is to implement a pharmacist initiated auto-substitution from long-acting inhalers to long-acting nebulized medications at our 609 bed academic medical center. Following the initiation process, we will compare patient outcomes as well as hospital cost data.

Methods: This study will be submitted to the Institutional Review Board for approval. Implementation of the pharmacist driven auto-substitution is anticipated to begin in January 2017. This pilot study will be conducted as a pre- and post-implementation, retrospective cohort. This study will include patients 18 year or older, admitted to select acute care floors, who have active orders for long-acting inhalers (excluding tiotropium or patients with trachs). The pre- and post-implementation groups will be identified via electronic medical record by active orders for long-acting controller inhalers and long-acting nebulized medications respectively. Our primary outcome will compare the two groups length of stay based on the month of admission (ex. January 2016 compared to January 2017). Secondary outcomes include: 30 day readmission, number of respiratory therapy administered treatments per

patient, duplicate inhaled therapies, transfers to critical care unit or higher level of care, the need for PRN inhalers and cost. Other data collection will include baseline demographics such as: age; sex; race; comorbidities; vital signs; primary diagnosis code; data to collect severity score.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-297

Poster Title: Use of Diltiazem versus Amiodarone in patients with new onset atrial fibrillation/atrial flutter and a history of heart failure with reduced ejection fraction

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Purpose: Atrial fibrillation and heart failure, recently described as a dual epidemic, are two of the most common cardiovascular diseases and often concurrent comorbidities. The ACC/AHA atrial fibrillation guidelines recommend rate control strategies first line, but discourage the use of nondihydropyridine calcium channel blockers in patients with coexisting heart failure. Data evaluating their use in this population, however, is lacking. The primary aim of this research is to determine if diltiazem use in heart failure patients increases overall length of hospital stay. Secondary aims of this research are to evaluate treatment success, acute worsening of heart failure, and adverse drug reactions.

Methods: This study is designed as a retrospective chart review of approximately 300 patients with new onset atrial fibrillation/flutter and a history of heart failure with reduced ejection fraction. The sample size was determined to reach 80% power with an alpha of 0.05. The protocol will be submitted for Institutional Review Board approval. Data will be evaluated for all patients over 18 years old with new onset atrial arrhythmias and a history of heart failure with reduced ejection fraction who received either IV/PO diltiazem or amiodarone. Exclusion criteria will consist of patients with a history of atrial arrhythmias, heart failure with preserved ejection fraction, receipt of other rate or rhythm control agents first line, surgical or ablative procedure first line, contraindications to study medications, patients presenting with heart failure exacerbation, patients changing atrial fibrillation therapy within 12 hours of initiation, and cardiothoracic surgery patients. Demographic data will be collected including, but not limited to: comorbidities, QTc, LVEF and heart failure home medications. Data collected for the primary endpoint will include admitting diagnosis, admitting service, and length of hospital stay. Treatment success will be collected as a secondary outcome and measured by achievement of

average heart rate less than 80 beats per minute or return of normal sinus rhythm within 48 hours. Duration of treatment, diuretic use, inotrope initiation, and adverse drug reactions will also be evaluated.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-298

Poster Title: Comparison of Intravenous and Oral Acetaminophen for Pain Reduction in Neurocritical Care Patients

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Purpose: Several studies have investigated differences between intravenous (IV) and oral (PO) acetaminophen administration in different patient populations with regard to analgesia, opioid use, and incidence of adverse effects. Most recently, a retrospective study of neurocritical care patients showed a significantly greater reduction in pain intensity 30 minutes after IV acetaminophen administration compared to PO. The purpose of this study is to prospectively examine the analgesic efficacy of IV versus PO acetaminophen in a neurocritical care population.

Methods: This is a single-center, prospective, double-dummy, randomized, placebo-controlled study to be conducted at a 609-bed academic medical center. Patients included in the study will be those presenting with a diagnosis of spontaneous intracranial hemorrhage (intracerebral hemorrhage, intraparenchymal hemorrhage, aneurysmal subarachnoid hemorrhage, intraventricular hemorrhage, subdural hematoma) enrolled within 12 hours of admission. Patients with no enteral access (PO or feeding tube), acetaminophen allergy, liver disease, and those weighing less than 50 kg will be excluded. Data collected will include age, gender, race, weight, intensive care unit (ICU) admitting diagnosis, pain scores before, 30 minutes after, and 24 hours after acetaminophen administration, opioid use and dose, and time to bowel movement. The primary endpoints of the study are the mean 24-hour Critical-Care Pain Observation (CPOT) score in intubated or sedated patients and the change in Visual Analog Scale (VIS) pain score 30 minutes after acetaminophen dose in non-intubated or non-sedated patients. Secondary endpoints include reduction in opioid equivalents, time to rescue analgesia,

time to bowel movement, adverse events, duration of mechanical ventilation, ICU length of stay, and hospital length of stay.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-299

Poster Title: Impact of the sequence of norepinephrine and vasopressin discontinuation in patients recovering from septic shock

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Purpose: Although the 2012 Surviving Sepsis guidelines offer guidance on the initiation of norepinephrine and vasopressin in septic shock, they do not address the sequence of their discontinuation after patients have recovered from septic shock. The objective of this study is to assess the impact of the sequence of norepinephrine and vasopressin discontinuation on intensive care unit (ICU) length of stay.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients with a diagnosis of sepsis and use of norepinephrine in combination with vasopressin. The following data will be collected: patient demographics, ICU length of stay, highest norepinephrine rate documented in each 24 hour period, total duration of norepinephrine, total duration of vasopressin, dose of norepinephrine when vasopressin was discontinued, dose of vasopressin when norepinephrine was discontinued, mean arterial pressure (MAP) at the time of norepinephrine discontinuation, MAP at the time of vasopressin discontinuation, lowest documented MAP within 24 hours after discontinuation of both agents, SOFA score, APACHE II score, and the use of corticosteroids. The primary endpoint will be to compare the ICU length of stay between patients in which norepinephrine or vasopressin was discontinued first, after combination of use in septic shock. Secondary endpoints include the dose of norepinephrine at which vasopressin was started, dose of norepinephrine at which vasopressin was stopped, incidence of hypotension within 24 hours upon discontinuation of the first agent, total vasoactive medication duration, and ICU mortality. Descriptive statistics will be used to analyze the data collected.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-300

Poster Title: Antibiotic use in pediatric appendicitis

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Purpose: Appendicitis is the most common surgical emergency in the pediatric population, with a high risk of infections and/or prolonged hospital stays if appropriate antibiotics are not utilized in the pre-operative and post-operative periods. The purpose of this study is to assess if the implementation of a pediatric-specific surgical order set increased the rate of appropriate antibiotic selection and weight-based dosing, decreased length of stay, and decreased occurrence of adverse outcomes in pediatric patients with appendicitis in a community hospital setting. The study will also evaluate the utilization of the surgical order set after implementation.

Methods: This retrospective chart review has been approved by the Institutional Review Board, and will evaluate patients 2 months to 17 years of age diagnosed with appendicitis and managed at WMC prior to and after implementation of a pediatric-specific order set. Patients will be identified through the electronic medical records via ICD 9 and 10 codes that reflect diagnosis of appendicitis. Data to be collected includes patient demographics, imaging results, initial laboratory values, perioperative antibiotic usage data, and adverse outcomes data, including surgical site infection, post-operative abscess formation, and post-operative small bowel obstruction. The study will compare the rate of appropriate antibiotic selection, rate of appropriate weight-based dosing, average length of stay, and rate of known surgical complications of the two study groups prior to and after implementation of the new order set. Appropriate antibiotic selection will be determined based on the current Pediatric Surgical Association guidelines. Appropriate weight-based dosing will be determined from tertiary pediatric dosing references.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-301

Poster Title: Implementation of protocol-based sepsis therapy in a community hospital

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Additional Author (s):
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Purpose: Williamson Medical Center implemented a sepsis initiative in September 2015. The initiative included extensive nursing and provider education, nurse driven sepsis screening, and the development of order sets that reflect the recommendations of the Surviving Sepsis Campaign. The goal of this retrospective study is to evaluate the implementation of a guideline-based severe sepsis and septic shock treatment protocol. We will compare patient outcomes one year before and one year after implementation.

Methods: This retrospective chart review will evaluate patients 18 years and older who developed severe sepsis or septic shock. We will assess mortality, time to appropriate antibiotics, and total intravenous fluid volume received by patients treated after the implementation of a protocol-based sepsis order set compared to a historical control group of patients treated prior to implementation. Compliance with the order set will be evaluated and we will also compare the mortality rates of subgroups with a history of heart failure and chronic kidney disease due to their perceived risk for iatrogenic fluid overload. The intervention group will include patients treated one year post-implementation of the sepsis initiative (10/1/2015-9/30/2016) and the control group will include patients treated one year prior to implementation (10/1/2014-9/30/2015). ICD-9-CM and ICD-10-CM codes will be used to identify adult patients diagnosed with severe sepsis or septic shock in the Williamson Medical Center Electronic Health Record. This study was submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 8-302

Poster Title: Impact on appropriate pneumococcal vaccine ordering following an enterprise-wide clinical decision support tool implementation

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Purpose: The Advisory Committee on Immunization Practices (ACIP) provides recommendations for the use of pneumococcal vaccines. These recommendations have become more complicated in recent years based on patient characteristics. CDS tools provide clinicians with a knowledge base and support to make appropriate clinical decisions. At the Hospital Corporation of America (HCA), a clinical decision support (CDS) tool was developed to assist healthcare providers in ordering the appropriate pneumococcal vaccination for patients. The study objective is to determine change in percentage of patients ordered appropriate pneumococcal vaccine after new clinical decision support screens were implemented.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective review will be conducted on patients who received screening for pneumococcal vaccination admitted to HCA facilities using Meditech 5.6. This study will exclude all pregnant patients. Data will be collected from both the electronic health record and the HCA data warehouse. As well as purchasing history for pneumococcal vaccinations. The following data will be collected including patient's age, prior vaccination status, co-morbid conditions, vaccine contraindications, vaccination ordered, vaccine administered. Two groups will be compared to assess the appropriateness of the vaccine ordered. The first group will be assessed prior to updated CDS screens and the second group will be assessed after the implementation of the CDS screens.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-303

Poster Title: Fluoroquinolone use after Antimicrobial Stewardship Program implementation

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Purpose: Resistance to fluoroquinolones is rising each year and their use is often associated with serious adverse events. In light of this, the FDA has issued a new black-box warning (BBW) regarding the use of fluoroquinolones and recommends using alternative agents for acute sinusitis, acute bronchitis and uncomplicated urinary tract infections (UTIs). Reducing the use of fluoroquinolones may limit the emergence of resistance and avoid associated adverse events. The purpose of this study is to determine if the implementation of an Antimicrobial Stewardship Program (ASP) will decrease the overall use of fluoroquinolones at a 574-bed community based hospital.

Methods: This study will be submitted to the Institutional Review Board (IRB) for approval. An electronic medical record system will be used to identify patients who have been treated with a fluoroquinolone for a suspected or confirmed infection during the same 3-month time frame before and after the implementation of the ASP. The following data will be collected: patient demographics, allergies, length of stay, antibiotic start date, antibiotic stop date, and concomitant antibiotic use. If available, indication, specimen type, current and previous culture results, sensitivities, 30-day readmission and 30-day mortality data will also be collected. The electronic medical record will be reviewed, if necessary, to determine the type of suspected or confirmed infection, risk factors for resistant organisms, recent antibiotic therapy, and potentially associated adverse events. Intervention documentation will be reviewed to determine if pharmacist recommendations were accepted or denied and any therapeutic changes that resulted from this intervention. All data will be recorded without patient identifiers to maintain patient confidentiality. A comparison of overall fluoroquinolone use prior to and after implementation of an ASP will be compiled upon reviewing the number of patients treated with levofloxacin or ciprofloxacin, appropriateness of therapy, associated adverse events, days of fluoroquinolone therapy and days of total antibiotic therapy.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-304

Poster Title: Clinical impact on empiric carbapenem use in the emergency department and intensive care units after implementation of antimicrobial stewardship and a clinical decision support tool

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Purpose: Increasing concern for resistance to carbapenems, particularly with carbapenem-resistant Enterobacteriaceae, drives the need to reevaluate carbapenem use. Effective January 1, 2017, The Joint Commission's new Medication Management standard 09.01.01 requires antimicrobial stewardship in hospitals and it is expected that the Centers for Medicare and Medicaid Services will soon require the same as a condition of participation. This study aims to assess the clinical impact of an antimicrobial stewardship program and a clinical decision support tool on minimizing the empiric use of carbapenems in the emergency department and intensive care units at a 574-bed community hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. First, the electronic medical record system will identify patients that were started empirically on any carbapenem in the emergency department or intensive care units from October 2015 to December 2015. The following data will be retrospectively collected: patient demographics, indication for carbapenem use, source or suspected source of infection, duration of carbapenem therapy, previous and concomitant antibiotic use, and documented allergies to beta lactams. If available, culture and susceptibility data, culture history, incidence of Clostridium difficile, 30-day readmission, and 30-day mortality data will be collected. Data will be collected for a duration of three months after the implementation of an antimicrobial stewardship program and a clinical decision support tool in September 2016. The primary outcome measure is duration of carbapenem therapy. Secondary outcomes measures will include C. difficile rates, lengths of stay, 30-day readmission rates, and 30-day mortality rates. All data will be recorded without patient identifiers to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-305

Poster Title: Evaluation of pharmacist involvement in Medicare Wellness Visits

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Purpose: The annual Medicare Wellness Visits (MWVs) are cost-covered visits for Medicare beneficiaries that focus on preventive health measures. Although medication reconciliation is a required component of the MWVs, pharmacists are rarely involved in conducting these visits. Furthermore, medication-related problems are frequently cited as a cause for increased morbidity in Medicare beneficiaries. As drug therapy experts, pharmacists can potentially help identify drug therapy problems to promote more safe and effective medication regimens. In order to advocate pharmacist involvement in MWVs, this study will be comparing drug therapy problems identified by pharmacists during MWVs compared to non-pharmacist providers.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who are due for their MWVs. The patient will be seen by a pharmacist for medication reconciliation. The patient will be provided with medication counseling and drug therapy recommendations will be documented. The data to be collected will include number of drug therapy problems identified and categorized as indication, effectiveness, safety, and compliance. The number of drug therapy problems identified by the pharmacist will be then compared to those identified by a non-pharmacist provider conducting MWVs. All data will be recorded without patient identifiers and a consent form will be provided to all patients prior to each MWV led by pharmacist.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-306

Poster Title: A system-based quality improvement focus on accurate patient weights

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Purpose: The Institute for Safe Medication Practices released the Targeted Medication Safety Best Practices for Hospitals in 2014 and a revision in 2016. The revision placed an emphasis upon the importance of measuring and documenting accurate patient weights to avoid significant medication errors. The best practice statement is two-fold. Patients should be weighed upon each encounter, avoiding the use of stated, estimated or historical weights. Second, patient weights should be measured and documented in metric units only. The objective of this study is to design, implement, and sustain such practices in a large, not-for-profit health system in Texas.

Methods: A representative sampling of operational, cultural, and practice data regarding the measurement and documentation of patient weights will be collected for departments and facilities throughout Baylor Scott & White Health System utilizing a standard survey tool. Upon the completion of data collection, an Ishikawa diagram will be utilized to identify factors contributing to errors involving inaccurate patient weights. A multidisciplinary focus team, including pharmacists, nurses, physicians, human factors engineers, biomedical engineers, and supply chain employees will be formed to prioritize changes to the current processes through the use of a failure modes and effect analysis (FMEA) matrix and assignment of risk priority numbers.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-307

Poster Title: Implementation of an information technology system to improve antibiotic stewardship process in a pediatric institution

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Purpose: There are a significant number of studies identifying the benefits of Antimicrobial Stewardship Programs (ASP) in adult hospitals, but considerably fewer are available for pediatric institutions. The purpose of this study is to evaluate the integration of MedMined® as a tool for improving the ASP of our clinical practice.

Methods: This study will be submitted to the IRB for approval. Prior to the evaluation of this tool, clinical pharmacists at Baylor Scott & White McLane Children's Medical Center were re-educated on the appropriate use and documentation within MedMined. The MedMined program will be used to identify patients on greater than 48 hours of antimicrobial therapy and pharmacists will evaluate the drug therapy for appropriateness and document their interventions. The primary outcome is categorizing and quantifying interventions made through the MedMined alert system over a six month period. The secondary outcomes for this study are change in drug cost and length of therapy per 1000 patient days for vancomycin, ceftriaxone, and piperacillin-tazobactam. The drug cost and length of therapy will be compared to the preceding year when MedMined was not in use.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-308

Poster Title: Impact of pharmacy residents and students on patient outcomes in a smoking cessation program at outpatient charity clinics: a retrospective study

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Purpose: A continuous quality improvement study was conducted at Baylor Scott & White charity outpatient clinics to assess the impact of pharmacy-delivered smoking cessation services. Twenty-one percent of patients self-reported smoking cessation and 42 percent self-reported reduction in cigarette use. While outcomes were positive, the study identified inconsistent follow-up of smoking cessation consults due to high clinic workload and an understaffed pharmacy team. To address this, pharmacy residents and students were integrated into the smoking cessation workflow. The objective of this study is to examine the impact of smoking cessation services provided by preceptors, pharmacy residents and students.

Methods: Institutional Review Board approval pending. This retrospective chart review will be conducted from July 2016 to October 2016 on patients enrolled in the smoking cessation program at three outpatient clinics receiving the highest number of smoking cessation referrals. Initial smoking cessation consultation includes assessment of smoking status and readiness to quit, review of non-pharmacologic and pharmacologic therapies, and implementation of individualized smoking cessation treatment plans. Follow up calls allow for further counseling including relapse prevention strategies, discussion of medication use, and motivational interviewing. The following data will be collected: patient age, sex, ethnicity, race, self-reported smoking status, quit stage, self-reported smoking cessation status, pharmacologic therapy being used, and number of follow-up smoking cessation consultations. The primary outcome is self-reported smoking cessation rates. Secondary outcomes include number of follow-up visits and self-reported reduction in total number of cigarettes per day. Primary and secondary outcomes will be compared to pharmacist interventions on smoking cessation prior to integration of pharmacy residents and students in the smoking cessation program.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-309

Poster Title: Impact of pharmacists' interventions in an anticoagulation clinic: a retrospective chart review

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Purpose: The beneficial outcomes of anticoagulation therapy depend on achieving and maintaining optimal INR therapeutic range. There is growing evidence showing improvement in anticoagulation management by pharmacists as compared to usual care. The purpose of this study is to compare pharmacists' impact on anticoagulation outcomes to standard of care.

Methods: Investigational IRB approval pending. This retrospective chart review study will be conducted from January 1, 2016 through August 31, 2016 at Baylor Scott & White charity anticoagulation clinics. In March 2016, clinical pharmacists shared responsibility with medical assistants and nurses for anticoagulation management. The following data will be collected: patients' demographics, INR goal range, time in therapeutic range, pharmacist interventions, adverse events, hospital and emergency admission rates, and medication adherence. The primary outcome of the study is percentage of time patients' INR was in therapeutic range (TTR). Secondary outcomes include frequency of adverse events, emergency room visits and hospitalizations related to anticoagulation, number of dose adjustments made, and adherence to warfarin therapy.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 8-310

Poster Title: Identifying factors of severe Clostridium difficile diarrhea in the neutropenic host

Primary Author: Luke Weber, Baylor Scott and White Memorial Hospital, TX; **Email:** luke.weber@bswhealth.org

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Purpose: Opportunistic infections by Clostridium difficile are the most common cause of nosocomial diarrhea. Per Infectious Diseases Society of America C. difficile guidelines, the severity of the disease and the initial treatment is based upon a collection of patient factors, one of which is an elevated white blood cell count. However, in neutropenic patients this risk factor cannot be utilized. The purpose of this evaluation is to examine what other criteria will be correlated to severe disease in neutropenic patients.

Methods: Once approved by the Institutional Review Board, this retrospective review will examine neutropenic cancer patients diagnosed with C. difficile associated diarrhea and use regression analysis to ascertain what patient characteristics are linked to severe outcomes. Primary endpoints defining severe disease include Pseudomembranous colitis, recurrence of C. difficile infection within 60 days, or any of the following in which C. difficile infection was the primary cause: death, colectomy, or admission to the intensive care unit. Inclusion criteria are: cancer patients who have received chemotherapy and within 30 days developed both an absolute neutrophil count less than 2000 cells per liter and C. difficile infection; or cancer patients who have an underlying neutropenia during an active C. difficile infection. Data points to be collected are as follows: malignancy, age , gender, history of COPD or diabetes, type of chemotherapy and antibiotic use in the past 30 days, albumin , lactate, creatinine, temperature, length of hospital stay prior to positive C. difficile PCR, date of last hospitalization, acid suppression therapy in the past 30 days systemic steroid use in the past 30 days, history of inflammatory bowel disease, and initial C. difficile therapy (drug, dose, frequency, duration).

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-311

Poster Title: Impact of pharmacists performing medication reviews during hospital discharge follow-up visits at a family medicine clinic

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Purpose: Hospital discharge visits are an important part of the transitional care process where drug therapy problems can be addressed by pharmacists. Studies have shown that readmission rates for patients with medication discrepancies were twice as high as those observed in patients without medication discrepancies. The purpose of this study is to identify the average number of drug therapy problems a pharmacist can identify per patient during hospital discharge follow-up visits. The types of drug therapy interventions will also be analyzed. The secondary outcome will be the number of patients that were readmitted within 30 days of the hospital discharge visit.

Methods: This study will be submitted to the Baylor Scott & White Institutional Review Board for approval. Patients will be scheduled for a hospital discharge follow-up visit at a family medicine clinic. During the first 10 minutes of the visit, the pharmacist will perform a complete medication review to identify potential drug therapy problems and medication discrepancies, provide patient education, and make recommendations to the physician if drug therapy modification is needed. The pharmacist will document all interventions in the patient's electronic medication record, and the data for these will be compiled for every patient. The following data will be collected: the number of interventions performed, the type of intervention that was performed (e.g. patient education on drug administration, incorrect drug, incorrect dose, therapeutic duplication, drug therapy needed and not provided), reason for hospitalization, patient age, gender, number of medications at hospital discharge, and the therapeutic class of the medications involved in discrepancies. The number of interventions performed during these visits during the study period will be counted, and they will be averaged over the number of patients that were seen. The study's secondary outcome will be

the number of readmission rates among this group of patients. Furthermore, data collected from patients who are readmitted will be analyzed in order to find potential risk factors for hospital readmission.

Results: Pending

Conclusion: Pending

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 8-312

Poster Title: Impact of pharmacist remote order verification in a quaternary academic medical center

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Purpose: According to American Society of Health System Pharmacy, pharmacy departments in comparison to other hospital departments have unique operational budgets with < 20% related to personnel expenses and >80% for medications and supplies. Rising medication costs require pharmacy leaders to be strategic in the delivery of patient care through their labor resources. Many rural hospital pharmacies implemented the labor cost-containment strategy of remote order verification (ROV) to provide 24/7 medication review; however, limited studies exist describing large academic medical centers using ROV. This study assesses ROV providing a standard of care within an academic medical center while improving pharmacy clinical services.

Methods: This is a quasi-experimental quality improvement study to determine the impact of remote order verification in a large academic medical center. Patients admitted during the study period will be divided into three groups: Group A (January 1 to February 28, 2016) – pre-implementation with all active clinical services; Group B (August 15 to October 15, 2016) – pre-implementation with suboptimal clinical services due to limited resources and no services in the outpatient heart failure clinic; and Group C (January 1, 2017 to February 28, 2017) – post-implementation with November being excluded as the washout period. Clinical services include rounding, warfarin and vancomycin consult services, patient profile reviews, and discharge counseling. To determine the pharmacist-led discharge counseling capture rate, interventions labeled as “discharge counseling” will be reviewed in the electronic health record (EHR). Also pharmacists’ interventions documented within the EHR will be quantified and evaluated throughout the study. The number of orders verified per pharmacist per hour will be assessed

as a measure of productivity. The quality of ROV will be assessed and analyzed through reported medication errors within the EHR and internal medication reporting system. A survey containing items on a 10-point Likert scale will be used to measure nursing satisfaction with the pharmacy department (Groups B and C). All measurements will be compared between groups to analyze the impact of remote order verification.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-313

Poster Title: Prescribing patterns of antipsychotics and associated outcomes in intensive care unit patients 65 years and older

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Purpose: In 2005, the FDA issued a notice alerting healthcare professionals to the increased risk of death in elderly patients who are 65 years or older with dementia-related psychosis treated with atypical antipsychotics. In 2008, the alert was updated to include conventional antipsychotics. Currently, there is a wide range of use of antipsychotics; however, when initiated in the intensive care unit (ICU), they are used to treat patients with delirium, agitation or insomnia. This study aims to assess the prescribing patterns of antipsychotics in elderly patients admitted to either the medical or neurology ICU at our institution and their outcomes.

Methods: A retrospective study will be performed to identify elderly patients who are 65 years or older admitted to the medical or neurology ICU at the study institution between January 2015 through December 2015 who received an antipsychotic. The antipsychotics in this study include aripiprazole, haloperidol, olanzapine, quetiapine, and ziprasidone. The following data will be collected: ICU admission and discharge date, age, weight, height, race, sex, drug, dosing, indication, ICU and hospital length of stay, and CAM-ICU documentation. In addition, patients' home medication histories will be examined for prior antipsychotic exposure. If available, baseline and post-antipsychotic exposure electrocardiogram data will be collected to measure for QTc prolongation. The primary endpoint is all-cause mortality. Secondary endpoints include ICU and in-hospital length of stay, change in QTc from baseline, rates of CAM-ICU documentation, and continuation of antipsychotics after transfer of care or discharge. Prescribing patterns will be assessed using the above collected data. All identifiable patient data will be recorded and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-314

Poster Title: Narrow spectrum empiric antimicrobial therapy for ventilator-associated pneumonia in critically ill trauma patients

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Purpose: Ventilator-associated pneumonia is a common nosocomial infection. Empiric broad spectrum antimicrobials are frequently prescribed upon suspicion of pneumonia. However, recent evidence-based guidelines suggest that patients who develop pneumonia less than 5 days into hospitalization are at lower risk of multi-drug resistant organisms compared to those with onset of pneumonia greater than 5 days. Additionally, incidence of pneumonia due to multi-drug resistant pathogens has not been extensively studied in traumatically injured patients. This study aims to assess the efficacy of utilizing a protocol that promotes narrow spectrum empiric antimicrobials for early ventilator-associated pneumonia in critically ill trauma patients.

Methods: A single-center, retrospective, quality assurance analysis will compare pre- and post-protocol respiratory culture results of adult trauma patients with ventilator-associated pneumonia. Patients will be classified as early [hospital days 0 to 5] or late [hospital days 6 or more] onset of pneumonia. The primary outcome will be the appropriateness of initial antimicrobial therapy based on identified pathogens and susceptibilities on respiratory cultures. Secondary outcomes include length of stay in the intensive care unit, 30 day all-cause mortality, antibiotic days of therapy, antibiotic-free days, percentage of antimicrobials utilized with activity against pseudomonas and MRSA, and rates of clostridium difficile infection. All data will be analyzed for normality of distribution. Summary statistics will be reported using measures of central tendency and statistical significance will be determined using the appropriate parametric tests or their non-parametric analogs.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-315

Poster Title: Empiric micafungin therapy and risk factors for candidemia

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Purpose: Currently, risk factors for candidemia are non-specific and qualify many patients for empiric antifungal therapy. Identification of more precise risk factors could promote more judicious use of empiric micafungin. Ultimately, this could decrease antifungal exposure, the development of resistant species, and associated costs. The objective of this study is to identify risk factors predicting candidemia in patients at Baylor University Medical Center in order to develop specific criteria to qualify patients for empiric micafungin therapy.

Methods: This retrospective case control will be submitted to the Institutional Review Board for approval. Using clinical surveillance software (MedMined, BD), patients with positive blood cultures for Candida species and patients on empiric micafungin for greater than 3 days will be identified. Patients with blood cultures positive for both Candida and bacteria will be excluded. Bone marrow transplant patients on prophylactic posaconazole will also be excluded. The electronic medical record will be used to collect the following data: age, gender, diabetes mellitus, cirrhosis, hemodialysis, immunosuppressant use, uncontrolled HIV/AIDS, central venous catheter, hospitalization within 90 days, antibiotic use within 30 days, antifungal exposure within 30 days, candidemia (organism, susceptibilities), total parenteral nutrition, recent surgery, multifocal Candida colonization, gastrointestinal perforation, severe sepsis, 1,3-beta-D-glucan result, duration of hospitalization prior to positive culture, culture collection site, length of stay, ICU length of stay, and 30-day mortality. Candida score will be calculated. All data will be analyzed for normality of distribution. Statistical significance will be determined using the appropriate parametric tests or non-parametric analogs. This data will be utilized to compare the two patient groups and identify which factors are the strongest predictors of candidemia.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-316

Poster Title: Application of the 4T Score in patients receiving Extracorporeal Membrane Oxygenation (ECMO) with suspicion of Heparin Induced Thrombocytopenia (HIT)

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Purpose: Anticoagulation is required for patients receiving extracorporeal membrane oxygenation (ECMO). Unfractionated heparin is the anticoagulant of choice with ECMO therapy. Thrombocytopenia may occur with heparin administration and/or ECMO. The 4T score is a strategy commonly used to predict probability of heparin induced thrombocytopenia (HIT). The 4T score has been reviewed in critically ill patients, but has never been looked at concomitantly in the ECMO population. The primary objective of this study is to determine the value of 4T scores in patients receiving ECMO, as it compares to 4T scoring in the critically ill.

Methods: This study will be submitted for Institutional Review Board approval. This retrospective chart review will include patients at Baylor University Medical Center in Dallas who were greater than 18 years old, who received ECMO, and had a HIT antibody assay sent from July 2012 through July 2016. We will gather our population from the current ECMO database which has 332 patients.
The primary objective is to evaluate 4T scores in ECMO patients versus critically ill, non-ECMO, case matched patients. Secondary objectives will include mean 4T score and length of ECMO with patients having SRA positive versus SRA negative results. In addition, there will be an assessment of the positive and negative predictive value defined as the percentage of patients with HIT and a 4T score greater than or equal to six or less than or equal to 3 respectively.
Data will be collected and recorded in a confidential manner, and clinical outcomes data will be summarized to mitigate patient identifiers. Data will include baseline demographics plus laboratory values including platelets, PT-INR, D-dimer, FDP, WBC, CRP, Il-6, and optical density.

The 4T score will be manually calculated. Summary statistics will be reported with the appropriate measures of central tendency. Appropriate parametric tests or non-parametric equivalent tests will be used. A P-value of less than 0.05 will indicate a statistically significant difference.

Results: N/A, research in progress

Conclusion: N/A, research in progress

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-317

Poster Title: Effect of risk-stratified mycophenolate mofetil dosing in heart transplantation outcomes

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Purpose: Mycophenolate mofetil (MMF) is considered the antimetabolite of choice after transplant; however, dosing can pose a therapeutic challenge. While the recommended dosage for MMF after heart transplant is 1.5 gram twice daily, in practice, dosing is commonly reduced due to intolerance. Safety and efficacy of reduced dose MMF regimens remains unclear. Due to increased infection with conventional MMF dosing, our center switched to a tailored approach based on age where low risk patients received 0.5 gram twice daily and high risk 1 gram twice daily. We sought to evaluate the impact of risk-stratified MMF dosing on outcomes after heart transplantation.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients who received a heart transplant between January 2013 and January 2016 will be retrospectively reviewed. Demographic data including recipient age, gender, race and immunosuppressive regimen history will be collected. If available, cold ischemic time, human leukocyte antigen (HLA) mismatches and panel reactive antibody (PRA) levels will be collected. Exclusion criteria will include multi-organ transplant, ongoing active infection or history of extensive liver disease. The primary objectives are to assess rate of biopsy-proven acute rejection and mortality. Secondary objectives will assess adverse effects associated with MMF including neutropenia, thrombocytopenia, and opportunistic infection. Fisher's exact or chi-squared test will be used to analyze nominal data. Continuous data will be analyzed using the student's t-test or its non-parametric analog. All patient data will be de-identified to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-318

Poster Title: Clinical outcomes of analgesic-first sedation versus benzodiazepine-first sedation in mechanically ventilated patients

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Purpose: Mechanically ventilated patients frequently experience pain and agitation, and require analgesics and sedatives for comfort, to mitigate stress and anxiety, and to improve compliance with mechanical ventilation. Studies, mostly from large tertiary institutions have shown that analgesic-based sedation is associated with shorter mechanical ventilation time and intensive care unit (ICU) length of stay compared with benzodiazepine-first sedation. The objective of this study is to evaluate and compare clinical outcomes in mechanically ventilated patients managed by analgesic-first sedation versus benzodiazepine-first sedation in an acute care community hospital.

Methods: This is a retrospective cohort study at an acute care community hospital. The inclusion criteria are adult patients admitted to the ICU from January 2016 to September 2016, mechanically ventilated for 48 hours or longer, and requiring continuous administration of analgesia and sedation. The exclusion criteria include pregnant or lactating women, patients who received neuromuscular or epidural blockade, history of opioid, sedative or alcohol abuse, major surgery within 3 days of ICU admission, metabolic encephalopathy, anticipated death during ICU stay, palliative care patients refraining from or refusing full life support, and induced hypothermia. The primary endpoint is duration of mechanical ventilation. The secondary endpoints are pain and sedation scores, and ICU and hospital length of stay (LOS). Data collected include demographic information, hospital LOS, duration of mechanical ventilation, daily doses of analgesics and benzodiazepines, and pain and sedation scores. Descriptive statistical analyses will be performed, and appropriate statistical testing will be applied to

compare the clinical outcomes of the analgesic-first sedation versus benzodiazepine-first sedation groups. The study has been submitted to Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-319

Poster Title: Evaluation of intravenous fluid resuscitation and pain management of sickle cell pain crisis in the emergency department

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Purpose: The most common manifestation of sickle cell disease and the reason for recurrent emergency department visits and hospital admissions is acute pain crisis, also known as vaso-occlusive crisis. Vaso-occlusive crisis will effect almost every patient with sickle cell disease during their life-time and usually presents as an abrupt onset of pain, varying from mild aches to debilitating pain. The purpose of this study is to evaluate intravenous fluid resuscitation and pain management for patients with sickle cell disease who present to the emergency department at a large academic medical center.

Methods: This study, which will be submitted to the Institutional Review Board for approval, is a single-center, retrospective chart review from September 1, 2015 to August 31, 2016 of all patients with any diagnosis of sickle cell type with suspected vaso-occlusive crisis upon presentation to the emergency department. The primary endpoint is the difference in emergency department length of stay in patients who were administered pain medication and intravenous fluids within one hour of emergency department registration versus patients who were not administered pain medication and intravenous fluids within one hour after emergency department registration. The secondary endpoints are the number of emergency department admissions for patients taking hydroxyurea versus patients not taking hydroxyurea, the number of hospital admissions in patients taking hydroxyurea versus patients not taking hydroxyurea, emergency department length of stay for patients who left the emergency department against medical advice versus patients discharged by the provider, and the number of patients admitted to the hospital versus patients discharged by the provider from the emergency department.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-320

Poster Title: Assessment of the rate of rejection with brand Prograf versus generic tacrolimus

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Purpose: Immunosuppressants for the prevention and treatment of organ rejection have been fundamental in establishing solid organ transplantation as the treatment of choice for many patients with end-stage organ failure of vital organs, including the kidney, liver, heart, and lungs. The contribution of tacrolimus to effective immunosuppression in solid organ transplantation is well established. The use of generic tacrolimus has become widely available and represents a viable cost-saving opportunity in minimizing post-transplant expenses and increasing medication compliance. The objective of this study is to determine the difference in rejection rates immediately post-transplant in patients receiving brand Prograf or generic tacrolimus.

Methods: This will be a single-center retrospective, observational study and will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify organ transplant recipients that received brand Prograf® or generic tacrolimus immediately post-transplant at CHI. St. Luke's Health, Baylor St. Luke's Medical Center between 01/2014 and 06/2016. Patients will be stratified based on the organ transplanted and time since transplant. Patients will be divided into two groups: those who received brand Prograf® and those who received generic tacrolimus. Data to be collected will include: patient age, gender, organ transplanted, PRA levels, Induction regimen, maintenance regimen, and biopsy proven rejection during the first 3 months of transplant. All data will be recorded without patient identifiers and maintained confidentially. Number of biopsy proven rejections will be calculated in each group. Study objectives will be answered using appropriate univariate and multivariate statistical techniques.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-321

Poster Title: Evaluating the use of gastrointestinal prophylaxis in a liver transplant population

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Purpose: Proton pump inhibitors (PPIs) or histamine-2 receptor blockers (H2RBs) are chosen for gastrointestinal ulcers prophylaxis in liver transplant patients. Previous studies suggested that H2RBs have similar efficacy and carry less infection-associated risks compared with PPIs. PPIs increase the risk of infection by altering gastric pH levels which allow bacteria to colonize in the gastrointestinal tract which can potentiate the risk of infection including Clostridium difficile and pneumonia. This study will be used to provide more data in terms of using PPIs compared to H2RBs in liver transplant population.

Methods: This is a retrospective, observational study evaluating liver transplant patients who were receiving PPIs or H2RBs at Baylor St. Luke's Medical Center (from August 1, 2013 to August 1, 2016). The primary endpoint will evaluate the incidents of gastrointestinal bleeding and H2RBs tolerability. Secondary endpoints will assess infection rates including pneumonia and Clostridium difficile. Patient records from the hospital healthcare software "Epic", will be reviewed following a data collection sheet. The data collection sheet will help us collect at least 100 liver transplant patients with 1:1 ratio in each study arm, using either PPIs or H2RBs. Individuals younger than 18 years old with recent or history of gastrointestinal bleeding with less than six months of treatment with PPIs are excluded from the study. The following data will be collected: patient age, gender, immunosuppressants, antibiotics used, comorbidities, and patients on mechanical ventilation. Other baseline data like white blood cell counts, maximum temperature, thrombocytopenia and imaging related to infection diagnosis will be involved. Data collected will be stored on a password protected Microsoft Office Excel 2007 spreadsheet and simple statistical method (mean, median) will be used in the analysis.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-322

Poster Title: Assessing the Induction Immunosuppression Therapy at a Liver Transplant Center

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Purpose: The aim of immunosuppression in liver transplantation is to balance the risk of organ rejection and drug toxicities. Patients generally receive potent and high intensity regimens intraoperatively and immediately post-transplant to prevent and minimize the risk of organ rejection. Therapies for immunosuppression consist of an induction and a maintenance phase. No guidelines have been set for induction therapy practices and the use of varies between different transplant centers. The aim of this project seeks to assess the safety and efficacy profile of induction agents, focusing on hydrocortisone compared to methylprednisolone.

Methods: This study will be submitted to Institutional Review Board for approval. This is a retrospective observational chart review of patients who received a liver transplant at CHI St. Luke's Health – Baylor St. Luke's Medical Center (BSLMC) from August 1, 2013 through August 31, 2016. A list of all patients receiving institution's induction therapy with hydrocortisone or methylprednisolone who fit the inclusion and exclusion criteria was obtained from the electronic health record database. At BSLMC, patients can receive 1 gm of hydrocortisone intraoperatively at the anhepatic phase; however methylprednisolone has also been observed to be given in place of hydrocortisone. Information collected will include demographics (age, gender), indication for transplant, pertinent labs, induction agents and doses, adverse effects related to induction therapy, tacrolimus dose, time to therapeutic tacrolimus levels, and evidence of rejection.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-323

Poster Title: Evaluation of warfarin dosing in patients with impaired renal function as compared to patients with normal renal function

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Purpose: Warfarin remains the most widely used oral anticoagulant option for patients with end-stage renal disease (ESRD). Previous studies have shown that CKD and ERSD patients require an approximate dose reduction of 20% to maintain a therapeutic INR and may require less time to achieve a therapeutic INR compared to patients with normal kidney function. The objective of this study is to is compare warfarin dosing requirements and time to reach therapeutic INR in patients with normal kidney function to patients with a creatinine clearance (CrCl) of < 30 mL/min (calculated via the Cockcroft-Gault equation) and/or patients on renal replacement therapy.

Methods: This study, which will be submitted to the Institutional Review Board for approval, is a single-center, retrospective, cohort observational study-evaluating patients who received warfarin therapy under pharmacy consulting services at CHI Baylor St. Luke's Medical Center. All profiles of patients admitted between September 2013 and September 2016. The following data will be collected: Patient age, gender, actual weight, comorbidities diseases, drug interaction, indication, baseline lab data of hemoglobin, platelet, and INR, daily Warfarin dose, time to therapeutic INR, time to supratherapeutic INR and Is therapeutic INR keeping patient from discharge. All adult patients (≥18 years) hospitalized at CHI Baylor St. Luke's Medical Center who received at least three days of warfarin therapy and followed by pharmacy consult service will be included. Exclusion criteria include patients with a baseline INR > 1.3, INR goal other than 2-3 and concurrent bivalirudin or argatroban therapy. The primary Endpoints: To compare the average daily dose of warfarin need to reach a therapeutic INR in patient with normal kidney function to that of patient with CKD or ESRD. Secondary Endpoints: To evaluate

time needed to reach therapeutic INR, use of unfractionated heparin versus low-molecular weight heparin, number of patient with supra-therapeutic INRs, and bleeding events.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-324

Poster Title: Impact of a procalcitonin-based algorithm on antibiotic use at a community acute care hospital

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Purpose: The excessive use of antibiotics may increase patients' exposure to potential adverse effects, affect bacterial resistance pattern, and contribute to increased healthcare cost. Previous studies demonstrate that procalcitonin (PCT)-based algorithm decreased antibiotic exposure in acutely-ill patients without adverse outcomes. However, evidence is unclear on how the utilization of PCT will impact clinicians' decision to de-escalate or discontinue antibiotics. In this study, we aim to assess whether the guidance of PCT can reduce the length of antibiotic therapy in clinically stable patients with suspected sepsis and/or bacterial infection.

Methods: This is an observational study at a community acute care hospital from September 2016 to February 2017. Per medical staff approved protocol, PCT is ordered by clinicians for patients with suspected sepsis and/or bacterial infection in the emergency department, intensive care unit, and progressive care unit. Sepsis is defined by the 2012 International Guidelines for Management of Severe Sepsis and Septic Shock in this study. Inclusion criteria are non-pregnant patients 18 years or older with suspected sepsis and/or bacterial infection. Exclusion criteria include patients who have received antibiotics 24 hours prior to admission, presentation of severe cardiogenic shock, paraneoplastic syndromes, or viral/malarial infection. The primary endpoint is number of days exposed to antibiotics. The secondary endpoints are hospital length of stay, antibiotic-related adverse outcomes, and cost-benefit analysis. All outcomes are compared between patients with baseline PCT levels and historical control patients with similar characteristics, who were admitted without PCT levels. Data of eligible

patients are to be collected from Electronic Medical Records. Descriptive statistical analyses and appropriate statistical testing will be applied to determine significance. This study has been submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-325

Poster Title: Prevalence of left atrial thrombus detection by transesophageal echocardiography in patients with atrial fibrillation/flutter undergoing catheter ablation: warfarin therapy versus target specific oral anticoagulants.

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Purpose: Studies investigating the prevalence of a left atrial (LA) thrombus as detected by a transesophageal echocardiogram (TEE) in atrial fibrillation (AF)/atrial flutter undergoing catheter ablation (CA) are currently limited to patients taking warfarin. The primary purpose of this study is to compare the prevalence of a LA thrombus as detected by a TEE in AF/atrial flutter patients receiving warfarin versus TSOACs for at least three weeks prior to CA. Secondarily, this study will assess for the risk of bleeding, correlation of the CHA2DS2-VASC scores to reported bleeding and thrombotic complications, and all-cause mortality.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a retrospective cohort study evaluating the presence of a LA thrombus in patients receiving warfarin versus TSOACs with a diagnosis of AF/atrial flutter undergoing a CA who were admitted between January 1, 2014 and August 31, 2016. Patients will be divided into two groups: those that took warfarin and those that took TSOACs. The following data will be collected for all patients: age; sex; race; documented past medical history; creatinine clearance; CHA2DS2-VASC score; HAS-BLED score and its parameters; AC regimen of either warfarin, apixaban, dabigatran, or rivaroxaban at home, prior to, and after CA; INR on day of TEE; duration of AC prior to admission; history of previous CA; and history of previous LA thrombi. Data from TTEs prior to CA will be reviewed for left ventricular size, LA size, LA volume, LA area, and presence of a LA thrombus. All documented complications will be collected. The primary objective is to assess for the prevalence of a LA thrombus as detected by a TEE in AF/atrial flutter patients on warfarin versus TSOAC patients undergoing a CA. The secondary objectives are to evaluate the incidence of bleeding among the warfarin group versus the TSOAC group,

correlate the calculated CHA2DS2-VASC scores to reported bleeding and thrombotic complications, and assess all-cause mortality.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-326

Poster Title: Comparison of outcomes in post-operative orthopedic surgery patients receiving rivaroxaban versus other anticoagulation agents for thromboprophylaxis

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Purpose: Orthopedic surgeries, such as total hip arthroplasty (THA) and total knee arthroplasty (TKA), are associated with significant risk of venous thromboembolism (VTE). In 2011, the Food and Drug Administration approved rivaroxaban, a direct factor Xa inhibitor, to prevent VTE in adults undergoing THA or TKA. Although several trials have demonstrated superior efficacy of rivaroxaban against enoxaparin, a low-molecular-weight heparin, in preventing VTE, outcomes such as surgical site infection and reoperation remain inadequately studied. This study compares rates of surgical site infection within 30 days of THA or TKA in patients treated with rivaroxaban versus patients treated with other anticoagulants.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Board for approval. Patients who underwent THA or TKA between September 2015 and September 2016 will be identified using ICD-9 codes in the Premier Hospital database. The electronic medical records of these patients will be retrospectively evaluated. Data collected will include: procedure and discharge date, surgeon name, procedure type, patient demographics, past medical history, and medications prior to surgery. Thromboprophylactic anticoagulation data including the agent used, dosing, timing of initiation and duration of therapy will be recorded. Additionally, the appropriateness of the thromboprophylaxis regimen will be determined based upon recommendations by the American College of Chest Physicians. Estimated blood loss during surgery, hematologic and coagulation data will be recorded at baseline, 24, 48, and 72 hours post-operation. Prophylactic antibiotic data including the agent used, dosing, timing of initiation and duration of therapy will be recorded. The appropriateness of antimicrobial prophylaxis will be determined based upon recommendations provided in the

Surgical Care Improvement Project guidelines. The primary endpoint is the occurrence of surgical site infection within 30 days of THA or TKA. The secondary endpoints are occurrence of deep venous thrombosis, pulmonary embolism, and major or minor bleeding.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-327

Poster Title: Treatment patterns and outcomes in adult patients with Candida parapsilosis candidemia at a large academic medical center: a retrospective cohort study

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Purpose: Echinocandins are frequently recommended as first line treatment for most Candida species. However, controversy exists around the optimal antifungal choice for the treatment of C. parapsilosis infections, as this species exhibits innately higher MICs to echinocandins. Clinical evidence to support the use of one antifungal over another is lacking. The goals of this study are to assess the rates of antifungal susceptibility and describe the treatment patterns of C. parapsilosis candidemia at a large academic medical center. This study also aims to describe the clinical outcomes among patients treated with different antifungal agents, including azoles and echinocandins.

Methods: This is a retrospective cohort study evaluating patients with at least one positive blood culture for C. parapsilosis at CHI St. Luke's Health Medical Center between December 2006 and January 2016. Patients with multiple Candida species in one culture will be excluded. Electronic medical records as well as the pharmacy and microbiology databases will be reviewed. The following data will be collected: demographics (age, sex, race, weight, height, past medical and surgical history), antifungal susceptibilities, antifungal treatment choices, antifungal dosing, microbiological clearance, laboratory data including white blood count and temperature, and mortality. Study objectives will be described using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Case Report

Session-Board Number: 8-328

Poster Title: Plerixafor's potential in pediatrics

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Purpose: Blood and marrow transplant patients undergo hematopoietic stem cell (HSC) collection prior to autologous stem cell transplant. They often require proliferation and mobilization of their stem cells before this collection process. Proliferation is achieved through the use of granulocyte colony stimulating factors (G-CSF). However, after proliferation, stem cells are anchored in the bone marrow by a chemokine receptor interaction. Plerixafor (Mozobil®) disrupts the interaction and allows the stem cells to move into the blood stream so that successful collection can occur. Data for this medication in the pediatric population is limited although adult data shows good success. This case series illustrates the utilization of plerixafor in pediatric patients with metastatic neuroblastoma undergoing HSC mobilization. The purpose is to analyze the safety and efficacy of plerixafor in the retrospective analysis of 2 pediatric cases. Both received plerixafor after at least one previously failed HSC mobilization with filgrastim (Neupogen®). Mobilization failure is defined as a peripheral CD34 count of < 10 cells/µL after the first 4 days of filgrastim therapy. Mobilization with plerixafor is considered successful if peripheral blood CD34 count is >10 cells/µL prior to apheresis and collection results in > 2.5 x 106 CD34 cells/kg per transplant. The first case is a three year old male with a history of metastatic neuroblastoma. After initial treatment failure with four days of G-CSF alone, he received one dose of plerixafor prior to stem cell collection to enhance mobilization. The second case is a one year old female, also with a history of metastatic neuroblastoma. The patient has failed collection in the past with G-CSF alone and upon presentation it was determined that plerixafor along with high-dose G-CSF would be used to avoid another failure. In both patients, plerixafor resulted in successful HSC mobilization after one dose. Safety analysis was conducted using defined adverse effects of plerixafor from the manufacturer labeling. Neither patient experienced any adverse effects.

Methods:

Results:

Conclusion:

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-329

Poster Title: Retrospective study evaluating antimicrobial prophylaxis in pediatric spinal surgeries

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Purpose: Surgical site infections after spinal surgeries result in increased morbidity, prolonged hospital stay, and increased health care costs. In an effort to decrease the number of surgical site infections (SSIs) after spinal surgeries at an academic pediatric institution, the infection control program designed an educational protocol card for surgeons to utilize perioperatively. The objective of this study is to compare adherence rates of using optimal antimicrobial prophylaxis before and after protocol implementation. The goal of this quality improvement study is to optimize antibiotic usage for surgical prophylaxis through identifying correlations between protocol adherence and appropriate antibiotic prescribing.

Methods: This is a retrospective, institutional review board approved, descriptive study based on a single center chart review. All patients with spinal surgeries with or without instrumentation from January 1, 2013 to September 1, 2016, regardless of whether or not they had post-operative surgical site infections, will be included in the study. Subjects will be excluded if they do not meet inclusion criteria, were on one or more antibiotics prior to surgery, or had a surgery performed at another hospital. Data of interest include patient specific characteristics, demographics, surgical antimicrobial prophylaxis regimen (including drug, dose, time of administration, and number of doses), and presence of surgical site infection. Descriptive statistics will be utilized to assess data for trends. Absolute occurrence will be used to determine average values across subject groups and relative percentage of patients that received antibiotic regimens adherent to the protocol. Rate of adherence to the protocol will be assessed over time, with the date of protocol implementation as the point of reference. The primary composite outcome is overall adherence to the protocol. A secondary aim is to identify correlations between protocol adherences to rates of infections.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-330

Poster Title: Evaluation of pharmacist-managed insulin therapy using telehealth glucometer technology

Primary Author: Stephen Liu, CHRISTUS Spohn Health System, TX; **Email:** stephen.liu@christushealth.org

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Purpose: Telehealth glucometer technology transmits home blood glucose readings to a web-based software that is accessed with an assigned username and password. This allows the provider to monitor patient blood glucose levels and titrate therapy on a more frequent basis; however, this technology is underutilized, as providers currently review the data just prior to clinic visits and not between them. The underutilization creates an opportunity for pharmacists to more closely monitor blood glucose levels and to optimize therapy. The objective is to compare the A1c prior to and after having a pharmacist titrate insulin therapy in-between provider visits.

Methods: This prospective study will include patients who already use telehealth glucometer technology, follow with the CHRISTUS Spohn outpatient clinic for management of their diabetes, and have been admitted to the hospital within the past year with a primary diagnosis of uncontrolled diabetes. Patients who have consented will attend an initial clinic visit with the pharmacist to establish care. This will include an assessment of baseline glycemic control and explanation of the pharmacist's role using the telehealth system. Thereafter, the pharmacist will schedule weekly telephone follow-up to review blood glucose levels, diet, and exercise, as well as implement any regimen changes. The primary endpoint will be the difference in A1c prior to and after pharmacist intervention. Secondary outcomes include the difference in mean fasting glucose between the first and last weeks in the study, incidence of readmission for uncontrolled diabetes, and patient compliance with glucometer use and appointments. All patient data will be stored on password-encrypted software and computers. This study is pending Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-331

Poster Title: Efficacy of the 10-year ASCVD equation in risk classification in a cohort of Hispanic and non-Hispanic patients with first-occurrence MI

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Purpose: The new atherosclerotic cardiovascular disease risk equation (ASCVD) is used to predict the 10-year risk of primary cardiovascular risk and potential benefit from statin therapy in patients who have never had a cardiovascular event. The equation, however, was developed with limited ethnic diversity. In fact, there are no studies that specifically look at the applicability and classification of the pooled cohort equation in the Hispanic population. In this study, we aim to evaluate the accuracy of the 10-year ASCVD equation in classifying and categorizing low-risk patients in Hispanic vs. non-Hispanic population.

Methods: This study will be submitted to Institutional Review Board (IRB) for approval before project initiation. Patients with first-occurrence myocardial infarction at CHRISTUS Trinity Mother Frances Health System-Tyler will be identified through electronic medical record databases (EPIC) and their 10-year ASCVD risk will be calculated. Pertinent data will be collected utilizing electronic medical record database including but not limited to patient demographics, labs, vital signs, comorbid conditions, statin use, ASCVD status, and social history. Patients' profiles of Hispanic and non-Hispanic descent will be randomly selected from a cohort group between December 2011 and September 2016. All data will be recorded and evaluated without patient identifiers to maintain confidentiality. Patient demographics, labs, and variables will be analyzed through descriptive statistics, and inferential statistical analyses will be utilized to assess the associations between outcome variables.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 8-332

Poster Title: Impact of implementation of an automated dispensing cabinet (ADC) profile dispense configuration on potential medication errors in the emergency department

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Purpose: The Joint Commission (TJC) and the Institute for Safe Medication Practices (ISMP) both support the prospective review of medication orders by pharmacists to optimize medication safety. This standard of care is not yet universally adopted in emergency departments across the nation. The purpose of this study is to determine if the implementation of an ADC profile dispense configuration, requiring prospective pharmacist medication order review, is associated with a change in potential medication errors, defined as the wrong medication warning event rate at the time of bedside medication barcode scanning.

Methods: This study has been submitted to the Institutional Review Board for approval. This is a study evaluating the impact of implementing a profile dispense configuration on the incidence of potential medication errors, as well as associated changes in the number of discontinued/expired order warnings and changes in barcode compliance. All information will be taken directly from reports generated monthly by the electronic medical record system (Epic©) that specifically track the number of wrong medication warnings, discontinued/expired order warnings, and rates of barcode compliance based on the total number of medication administrations per department.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 8-333

Poster Title: Pharmacist driven discontinuation protocol for nonsteroidal anti-inflammatory drugs (NSAIDs) in heart failure patients

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Purpose: The FDA has recently strengthened the warning on non-steroidal anti-inflammatory drugs (NSAIDs) and their use in patients with cardiovascular disease, particularly in patients with heart failure (HF). NSAID use is particularly concerning in HF as observational data has linked NSAID use with an increase in morbidity and mortality in this subset of cardiovascular disease. The purpose of this study is to evaluate the effect of the decision support trigger tool with the pharmacist driven NSAID discontinuation protocol on patient outcomes as defined by the frequency of NSAID prescriptions on discharge and 90 day readmission rate within the HF population.

Methods: The electronic medical record system will identify patients with an admitting diagnosis of HF who also have orders for a scheduled NSAID. The following data will be collected: age, other cardiovascular diseases, physical exam findings, NSAID ordered, home NSAID use, physician action to clinical decision tool, pharmacist documentation, NSAID discontinuation, NSAID on discharge, readmission within 90-days of discharge. Provider documentation will be reviewed for compliance with trigger tool. All data will be recorded without patient identifiers and maintained confidentially. Pharmacist will be notified of scheduled NSAID order, in combination with HF admitting diagnosis. Pharmacist will review chart, discontinue the NSAID and counsel patient on NSAID use. Readmission data will be reviewed to evaluate HF patients continued on NSAIDs after discharge.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-334

Poster Title: Systemic corticosteroids for exacerbation in Cystic Fibrosis patients without asthma: a single-center retrospective chart review

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Additional Author (s):
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Purpose: An important focus of the management of Cystic Fibrosis (CF) is treatment of exacerbations when they occur. Though guidelines do not recommend their use in CF patients without asthma, systemic corticosteroids may provide benefit in acute exacerbations in this population. The primary objective of this study is to evaluate the risks and benefits of systemic steroid use in CF exacerbations in patients without asthma. The secondary objective will quantify the use of systemic steroids in CF exacerbations in patients without asthma at our institution.

Methods: This study is a retrospective chart review of patients admitted to a single institution for a CF exacerbation between July 1, 2015 and June 30, 2016. Data will be collected using the electronic medical record. Patients will be included if they are 21 years of age or younger, have a diagnosis of CF, and are admitted to the hospital during the study period. Patients with a diagnosis of asthma will be excluded from this study. Data collected includes: age, gender, ethnicity, diagnosis code used for admission, systemic steroid administered (including dose, directions, and length of therapy), length of stay, pulmonary function tests, blood pressure, additional medication requirement for blood pressure control, blood glucose, and requirement for additional insulin therapy. Comparisons will be made between patients who received steroids and those who did not. All data will be stored in a secure database and only accessible to the research team. This study has been approved by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-335

Poster Title: Assessment of empiric antimicrobial therapy choice in critically ill pediatric patients with sepsis

Primary Author: Matthew Nguyen, Cook Children's Medical Center, TX; **Email:** matthew.nguyen@cookchildrens.org

Additional Author (s):
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Purpose: At our institution, a sepsis screening tool embedded in the electronic healthcare record facilitates early identification and treatment of sepsis. Although the tool and associated processes have decreased time to antibiotic and fluid delivery, the coverage provided by initial empiric antimicrobial therapy has yet to be assessed. The purpose of this study is to determine adequacy of empiric antimicrobial therapy in a retrospective cohort of septic pediatric intensive care patients in a freestanding, tertiary care medical center.

Methods: A retrospective review of empiric antimicrobial therapy will be conducted for patients diagnosed with severe sepsis or septic shock and who were treated in the pediatric intensive care unit from October 1, 2012 through May 31, 2016. Inclusion criteria will include age of less than 18 years, initial emergency room visit with antimicrobial therapy initiated in the first twenty-four hours of presentation, and positive culture results. Demographic data will comprise of age, gender, weight, and co-morbidities. Treatment and outcome data will include infection source, mortality, length of hospitalization, total duration of antibiotic(s), cultured pathogens, susceptibility profiles, and antibiotics initiated within the first twenty-four hours. The primary objective, adequacy of empiric antimicrobial therapy, will be determined by the drug impact on the pathogen's susceptibility profile. Results from the study will be used to identify potential improvement opportunities for empiric antimicrobial therapy selection. All collected data will be entered into a protected database created with Microsoft Excel 2016. Descriptive analyses, chi-square and logistic regression analyses, general linear model, and critical alpha level of 0.05 for inferential statistics will be used. Analyses will be performed with

Statistical Analysis System and Statistical Package for the Social Sciences. This study was exempted from the Institutional Review Board as quality improvement work product.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 8-336

Poster Title: Development of an interactive pharmacy tracker with clinical guidance for outpatient oncology treatment

Primary Author: Bryan Donald, Corpus Christi Medical Center, TX; **Email:** bryan.donald@hcahealthcare.com

Additional Author (s):
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Joseph High

Purpose: Computerized order entry (COE) has been demonstrated to improve medication safety, however, nationwide COE for chemotherapy has been implemented more slowly and reluctantly than non-chemotherapy orders. Implementation of COE for chemotherapy should be carefully considered and designed to improve medication safety for chemotherapy drugs, which are considered high-risk medications.
This study will describe the development and implementation of a COE application for oncologists and pharmacists to order and track chemotherapy orders in a facility with a newly opened outpatient oncology treatment center.

Methods: This study will be submitted to the Institutional Review Board for approval. The COE application will be developed and stored on a secure, internal server and synchronized with the electronic medical record. During Phase I of implementation, oncologists will continue to issue paper orders, which will be entered into the COE application by oncology pharmacists. Phase II of implementation will include oncologists in the COE process.
The application will require pharmacists to monitor critical information including vital signs, laboratory data, and medication regimens, doses and exposure before preparing chemotherapy for patients. Pharmacists are also required to double-check oncology orders and regimens against published literature for safety and accuracy and to document, discuss, and resolve deviations from sources with oncologists. Finally, a second pharmacist must double-check COE and verification of any oncology order. The application will track pharmacists' monitoring, literature review, double-checks, and input, check, or monitoring errors.
Information will be collected about input errors, adherence to pharmacist-led drug monitoring, adherence to pharmacist-led literature review, and conformity of ordered regimens to

literature and guidelines. Additionally, a survey will be distributed to personnel who interact with the application to assess perceptions of ease-of-use and patient safety. These results will be analyzed with descriptive statistics.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-337

Poster Title: Utilization of chest radiographic imaging and clinical parameters to evaluate inappropriate use of antimicrobial therapy in patients with fluid overload and congestive heart failure

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Additional Author (s):
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Purpose: Pneumonia can be a potentially life-threatening lung infection that is treated with antimicrobial therapy. Chest radiography is a noninvasive approach used to evaluate and diagnose pneumonia, fluid overload, and chronic lung diseases. Patients with radiographic evidence of fluid overload without typical clinical symptoms of pneumonia are often misdiagnosed and started on empiric antimicrobial therapy. This study will evaluate the inappropriate use of antimicrobial therapy in critically ill patients with fluid overload or congestive heart failure misdiagnosed with pneumonia. Inappropriate use of antimicrobial therapy in such clinical settings can lead to Clostridium difficile infection, antimicrobial resistance and prolonged hospitalization.

Methods: Study protocol will be submitted to the Institutional Review Board for approval. Electronic medical record (EMR) will be used to search for patients with radiologic evidence of fluid overload or congestive heart failure admitted into the intensive care units at a community teaching hospital. A retrospective chart review of this cohort will be conducted to identify patients with no clinical features of pneumonia that received empiric antimicrobial therapy. Patients will also be identified prospectively during antimicrobial stewardship rounds (ASP). Patients on antimicrobial therapy for concurrent infections other than pneumonia will be excluded. Demographic and clinical data collected will include past medical history, physical examination, home medications, laboratory and microbiology results, chest radiographs, medication orders, diagnoses, and discharge information. Data on physicians' documentation and rationale for antimicrobial therapy based on results of chest radiographs will also be

collected. Patient information will be de-identified. The primary outcome is to determine number of cases with fluid overload or congestive heart failure with no radiologic or clinical evidence of pneumonia managed with antimicrobial therapy. Secondary outcomes will assess antimicrobial therapy associated complications, and number of cases with ASP recommendations as well as resulting outcomes. Investigators will evaluate antimicrobial therapy for appropriateness based on radiographic evidence and clinical presentation in accordance with current practice guidelines. Analysis of this study will elucidate the inappropriate use of antimicrobial therapy in this cohort.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-338

Poster Title: Evaluation of inter rater reliability of the ramsay sedation scale and its utility in dosing of sedatives in critically ill patients

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Purpose: Titratable palliative sedation (TPS) is defined as the use of sedative medications to relieve intolerable and refractory distress by the reduction in patient consciousness. TPS can be adjusted according to objective and subjective data, Ramsay Sedation Scale (RSS). Variability in clinician assessment or improper use of the RSS can contribute to poor patient outcomes. Inter-rater reliability (IRR) and its correlation to variations in dosing will be assessed to determine if there is a need for additional training of healthcare professionals in sedation scale assessment.

Methods: Institutional Review Board (IRB) exempt approval will be obtained. This will be a prospective data collection study. Patients will be identified with the assistance of the critical care team. Mechanically ventilated patients will be included in the study. Patients with neurogenic abnormalities will be excluded. Data will be collected from nursing charts and the electronic health record. Such data will include: demographics, past medical history, vitals, laboratory values and sedative medication dosage, along with interacting medications and adverse effects. Patient data will be de-identified and confidentiality will be maintained. The first part of the study will determine IRR. Two separate trained evaluators will prospectively assess patients' sedation scales using the RSS; their assessments will then be compared to those determined by the nursing staff. Inter-rater reliability will be assessed via analysis of Fleiss' Kappa statistics, from data collected. The kappa statistics will provide an indication for reliability of application of RSS in this facility. The second part of the study will correlate dosing administration with sedation assessments to identify institutional trends. This data will be stratified to determine if any observed time-related variances in sedative doses employed are

either physiological or a result of inter-rater variability. The results will also be stratified based on demographic characteristics.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 8-339

Poster Title: Impact of an automated dispensing cabinet-regulated community insulin vial pilot program on inventory costs

Primary Author: Amanda Grego, Harris Health System, TX; **Email:** amanda.grego@harrishealth.org

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Purpose: Subcutaneous insulin injections are a commonly used treatment for glycemic control of patients in a hospital setting. Various studies have been conducted regarding the effect of switching from an insulin vial to an insulin pen in a hospital setting; however, few studies have been conducted regarding the impact of switching from a patient-specific insulin vial to a community insulin vial. The primary objective of this study is to assess the impact an automated dispensing cabinet-regulated community insulin vial pilot program on inventory costs.

Methods: This study will be submitted to the Harris Health System Institutional Review Board for approval. An automated dispensing cabinet-regulated community insulin vial pilot program will be implemented in two nursing units of Ben Taub Hospital. This pilot program will target regular insulin, NPH insulin, and insulin detemir in a designated surgical unit and a medical intensive care unit (MICU). Before implementation, nursing and pharmacy staff will receive education regarding the pilot program workflow. The primary endpoint of this study is the impact on inventory cost which will be calculated by multiplying insulin utilization before and after implementation by the institution's acquisition cost. The secondary endpoints include the impact on the average number of insulin vials per patient, the average number of medication messages sent to pharmacy per insulin order, and the average employee satisfaction survey score for nursing and pharmacy. In order to measure employee satisfaction regarding the insulin administration and dispensing process, respective nursing and pharmacy staff will voluntarily complete anonymous pre- and post-implementation surveys using a 5-point Likert scale. All other metrics will be analyzed over a 3-month period before and after

implementation. The student's t-test will be used to compare continuous data and the chi-square test will be used to compare categorical data.

Results: Pending implementation and data analysis

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-340

Poster Title: Evaluation of Clinical Outcomes in HIV/Hepatitis C co-infected patients treated with direct-acting antivirals (DAAs) for Hepatitis C in an Ambulatory Care setting

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Purpose: Hepatitis C is a bloodborne pathogen that can result in liver damage and cirrhosis if left untreated. Literature has revealed that co-infected patients were three times more likely than patients without HIV co-infection to develop decompensated liver disease and therefore more likely to experience adverse events related to treatment. Conventional Hepatitis C treatment included combination interferon and ribavirin. This regimen has poor efficacy and serious treatment-related side effects. The purpose of this study is to determine the real-world effectiveness of these newer direct acting Hepatitis C antivirals in HIV/Hepatitis C co-infected patients in an ambulatory care setting.

Methods: This study is a retrospective chart review that will be submitted to the Institutional Review Board for approval. A list of patients meeting the inclusion criteria will be generated by Harris Health's Information Technology department for this study. All patient data will be de-identified and encrypted. Patients included in this study are over the age of 18, diagnosed with HIV/Hepatitis C, and completed treatment with one or more of the following medications: ledipasvir/sofosbuvir, elbasvir/grazoprevir, ombitasvir/paritaprevir/ritonavir/dasabuvir, sofosbuvir/velpatasvir, daclatasvir, PEG-interferon Alpha-2a, PEG-interferon Alpha-2b, and ribavirin. Approximately 100 patient charts in Harris Health's electronic medical records system will be reviewed. Data obtained will include: patient demographics, degree of cirrhosis present, antivirals received, Hepatitis C genotype, prior Hepatitis C treatment, Hepatitis C RNA viral load, number of follow-up visits attended with a clinical pharmacist or primary care physician, patient compliance, reported adverse events related to Hepatitis C treatment (fatigue, diarrhea, nausea, liver function test elevations), and the source of funding for these newer direct acting antiviral medications. Patients will be stratified based on the degree of cirrhosis present (Metavir score). The primary outcome is the number of patients with sustained virological

response or undetectable Hepatitis C viral load at 12 and 24 weeks post-treatment. The secondary outcomes include treatment related adverse events, source of funding for medications, and relapses related to treatment.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 8-341

Poster Title: Assessment of the feasibility in implementing a mail order prescription service for an indigent patient population within a community health system

Primary Author: LiChao Zhao, Harris Health System, TX; **Email:** lichao.zhao@harrishealth.org

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Purpose: Harris Health System is the third largest community health system in the United States with 15 outpatient pharmacies dispensing over 2.2 million prescriptions per year. The health system serves approximately 64 percent of uninsured and underinsured residents of Harris County. Currently, limited data is available regarding success of mail order prescription services within underserved communities and individuals with transient lifestyles. The purpose of this project is to assess the overall feasibility of providing mail order service within Harris Health System and consider potential benefits including patient satisfaction, medication compliance, and financial impact.

Methods: This multicenter prospective study has been deemed exempt from Harris Health System Institutional Review Board approval. An electronic medical record will be utilized to collect data and MyHealth enrollment information on patients who receive prescriptions at Harris Health System. Additionally, an electronic questionnaire will be sent to patients to determine interest in mail order services and assess the accuracy of patient details. Projected expenditures (automation, mailing providers) and return on investment (ROI) will be developed and presented for administrative approval.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-342

Poster Title: Impact of switching patients with diabetes in the ambulatory care setting on insulin vial to insulin pen therapy within a county-owned healthcare system.

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Purpose: Diabetes mellitus (DM) is a chronic condition associated with high morbidity and mortality. Insulin vial therapy may present a compliance barrier to some patients. Insulin pens have been found to improve compliance while providing similar glycemic control to insulin vial therapy. Studies have been conducted converting patients with diabetes from insulin vials to insulin pens, but few have been conducted in the ambulatory care setting in a county-owned healthcare system. The primary objective of this study is to evaluate the clinical and economic impact of converting patients with diabetes in a county-owned healthcare system from insulin vials to insulin pens.

Methods: This study has been deemed exempt from the Institutional Review Board. This prospective, cohort study will focus on patients 18 years old or greater with a diagnosis of diabetes who used insulin vials between March 1, 2015 and March 1, 2016 and were then switched to insulin detemir pens after March 1, 2016. Pregnant patients will be excluded. A random sample of 200 patients converted to insulin detemir pen therapy from March 1, 2016 to September 1, 2016 will be analyzed. The following data will be collected: patient demographics, past medical history, medications related to diabetes, HbA1c, insulin fill history and patient satisfaction. A telephone survey will be used to assess patient satisfaction with insulin detemir pen therapy. Student t-test and chi-square test will be used to compare continuous data and categorical data respectively. Institutional costs comparing vial and pen therapy will be assessed based on estimated utilization. Secondary objectives are compliance and patient satisfaction.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 8-343

Poster Title: Impact of rescheduling of hydrocodone combination products from schedule III to schedule II on patient pain management

Primary Author: Cindy Adibe, Harris Health System, TX; **Email:** cindy.adibe@harrishealth.org

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Purpose: Effective October 6, 2014, all hydrocodone combination products were rescheduled by the DEA from Schedule III to Schedule II in an effort to combat prescription drug abuse. These prescriptions must be written on a DPS official prescription form and no refills may be authorized. A previous study showed that this rescheduling decreased the hydrocodone prescribing habits of physicians at Harris Health System. More physicians are prescribing tramadol and acetaminophen-codeine no. 3 instead of hydrocodone for pain management. Given the change in prescribing habits, we are assessing the impact on patient pain management and the financial impact on the institution.

Methods: This study will be submitted to the Institutional Review Board (IRB) for approval. The monthly electronic medical record reports for outpatient controlled substance prescribing will be reviewed from October 2012 to December 2012 and October 2015 to December 2015. These two sets of data will be compared to ensure that the reports measure equal time periods before and after the rescheduling of hydrocodone. Patients will be included if they were discharged from Ben Taub or Lyndon B. Johnson Emergency Center during these time periods, and were prescribed at least one analgesic controlled substance in a solid oral dosage form (i.e. tablets, capsules). Patients will be excluded if they have a documented history of drug-seeking behavior. The following data will be collected and included in the analysis: patient age, gender, ethnicity, the prescribed analgesic and other current medications, the indication for the analgesic, and the number of pain-related primary care visits after the initial emergency center visit. All data will be used to assess the potential impact on patients' pain control, evaluate the financial impact on the institution, and explore cost-savings pain management alternatives. The

measurable data will be categorized based on the number of pain-related visits and the cost to the institution.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-344

Poster Title: Evaluation of fall risk in elderly patients taking antihypertensive medications concomitant with overactive bladder or benign prostatic hyperplasia medications

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Purpose: Medications used to treat hypertension, benign prostatic hyperplasia or overactive bladder share similar side effects that may have an association with increased fall risk in the elderly population. The purpose of this study is to investigate the combined effect of medications used in the treatment of hypertension, benign prostatic hyperplasia or overactive bladder on the risk of falls that necessitate hospitalization.

Methods: This study has been submitted to the Institutional Review Board for approval. Electronic medical records will be used to identify patients over the age of sixty-five who have been admitted to the hospital for injuries due to fall. Age, gender, body mass index, causative medications, dosage of medications being studied, average daily blood pressure, average daily heart rate, ambulatory status, diagnosis of fracture, and comorbidities will be recorded. All patient data will be recorded without patient identifiers and maintained confidentiality. Three categories of these patients will be analyzed: patients prescribed antihypertensive and benign prostatic hyperplasia or overactive bladder medications, patients prescribed antihypertensive medications without medications for benign prostatic hyperplasia or overactive bladder, and patients prescribed medications for benign prostatic hyperplasia or overactive bladder without the use of antihypertensive medications. The three groups will be matched based on gender, age, and comorbidities. Fall rates among the three groups will then be analyzed as the primary endpoint. The secondary endpoint will be fracture risk.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-345

Poster Title: Evaluating antiretroviral therapy in hospitalized HIV-infected patients

Primary Author: Lynn Dang, Memorial Hermann Hospital System, TX; **Email:** lynn.dang@memorialhermann.org

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Purpose: Human Immunodeficiency Virus (HIV) related deaths have decreased significantly in the past decade. The decline in HIV-related deaths is in part due to advances in antiretroviral therapy (ART), which has led to improved tolerability and efficacy making HIV a more manageable chronic disease. Despite these improvements, there continues to be challenges with ART regimens due to adherence, drug interactions, and toxicity. These problems become more apparent when HIV patients are hospitalized. The purpose of this study is to quantify the number of ART regimens requiring optimization at three community hospitals within a large healthcare system in Houston, Texas.

Methods: This retrospective, multicenter chart review in HIV-infected patients who were hospitalized from January 2016 – June 2016 was determined exempt by the Institutional Review Board. Patients will be identified by a computer-generated report using ICD-9 diagnosis code 40 for HIV. Adult patients greater than 18 years old admitted with an existing diagnosis of HIV and have scheduled ART medication orders on the electronic medication administration record (eMAR) will be included in the study. Patients receiving ART for indications other than HIV and those who were newly diagnosed with HIV during hospitalization will be excluded. The primary outcome will be the number of ART regimens requiring optimization related to regimen selection, dosing, and drug interactions. In addition, secondary outcomes aim to assess whether ART compliance was evaluated prior to order entry, if the need for opportunistic infection prophylaxis was addressed, and the overall impact of an infectious diseases specialist on the interventions. The following data points will be collected: gender, age, race, height, weight, CD4 T-cell, HIV RNA (viral load), serum creatinine, creatinine clearance (estimated based on the Cockcroft–Gault equation), ART regimen ordered in the hospital as well as other scheduled medications. All data will be collected without patient identifiers and maintained confidentially

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-346

Poster Title: Evaluation of blood glucose control using computer-based insulin protocol

Primary Author: Hongmei Wang, Memorial Hermann Hospital System, TX; **Email:** hongmei.wang@memorialhermann.org

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Julin Thomas

Purpose: Hyperglycemia is common in critically ill patients with or without diabetes. The occurrence of hyperglycemia, especially severe hyperglycemia, is a predictor of poor clinical outcome in variety of patients. Computer-based insulin infusion protocol has been shown to achieve stable blood glucose control without an increased risk of hyperglycemic and hypoglycemic events compared to paper-based protocol. The purpose of this study is to evaluate the efficacy and safety of a computer versus paper-based insulin infusion protocol on blood glucose control for adult intensive care units (ICU), intensive medicine units (IMU) and cardiovascular intensive care units (CVICU) patients.

Methods: The study is a retrospective, observational pre- and post- implementation study evaluating computer-based Atlanta Multiplier Insulin Protocol compare to paper-based Columnar Insulin Dosing Protocol at a single institution. Collection of data was performed in adult patients (greater or equal to 18 years old) admitted to ICU, IMU and CVICU treated with insulin infusion in Memorial Hermann Greater Heights Hospital. Patients who underwent diabetic ketoacidosis and hyperosmolar hyperglycemic syndrome treatment were excluded. The first co-primary endpoint was time to first blood glucose in target range (110 to 180 mg/dL). The second co-primary endpoint was the incidence of hypoglycemic events (less than or equal to 40 mg/dL and 40 to 60 mg/dL). The secondary endpoints were mean daily blood glucose level (24 hours), the incidence of hyperglycemia (greater or equal to 180 mg/dL), ICU length of stay and hospital length of stay. Normally distributed continuous variables were reported as mean and stand deviation and compared using t-tests. Non-normally distributed continuous variables were reported as median and interquartile range (IQR) and compared using the Mann-Whitney U test. Proportional differences in nominal variables between groups were compared using Fisher's exact or Chi-squared tests. Statistical significance was defined with P value less than 0.05, and all results were 2-tailed.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-347

Poster Title: Evaluation of antibiotic usage in patients with beta-lactam allergy in a community emergency department

Primary Author: Soyoon Lee, Memorial Hermann Hospital System, TX; **Email:** soyoon.lee@memorialhermann.org

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Purpose: Having a documented beta-lactam allergy can increase risk of harm, be treated with suboptimal antibiotics, and may contribute to emergence and spread of multi-drug resistant organisms. The Obama administration released a National Action Plan to combat antibiotic resistance by establishing antibiotic stewardship programs in all hospitals. The increased emergence of multi-drug resistant bacteria urges the hospital to ensure optimal antibiotic selection by limiting overuse and misuse of antibiotics. The objective of this study is to evaluate the antibiotic selection in patients with a reported beta-lactam allergy at Memorial Hermann The Woodlands Emergency Department (ED).

Methods: The study was submitted for approval to the Institutional Review Board. Data will be collected retrospectively from the Memorial Hermann Hospital System's electronic medical record (EMR) from January 1, 2016 to June 30, 2016. Patients who were 18 years or older admitted to the ED with reported beta-lactam allergy and received at least a single dose of antibiotic that was ordered by the ED physician are included. Patients who had their beta-lactam allergy documented after antibiotic administration are excluded from the study. Data elements will include age, gender, pregnancy status, allergy and documented allergic reaction in the EMR upon ED admission, administered antibiotic, allergic reaction noted if beta-lactam antibiotic was administered, main infectious diagnosis, and infectious disease (ID) consultation. The primary endpoint is the number of each antibiotic administered. Secondary endpoints include the appropriateness of antibiotic, allergic reaction noted if patient was re-challenged, ID consultation, and prescribing ED physician. Descriptive statistical analysis will be used to analyze the data.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-348

Poster Title: Safety and efficacy of varying doses of insulin for the treatment of hyperkalemia in patients with end stage renal disease

Primary Author: Trishna Kuber, Memorial Hermann Memorial City Medical Center, TX; **Email:** trishnakuber@gmail.com

Additional Author (s):
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Sapana Desai

Purpose: Patients with end stage renal disease on dialysis are at an increased risk of hyperkalemia. A common treatment to quickly shift potassium intracellularly is through the administration of insulin. The purpose of this study is to assess whether 5 units of insulin compared to 10 units of insulin decreases the incidence of hypoglycemia while effectively lowering serum potassium levels in patients with end stage renal disease requiring dialysis.

Methods: This study will be a retrospective, observational study that will be submitted to the Institutional Review Board for approval. Eligible patients will be identified via electronic medical records and will be included if they have end stage renal disease requiring dialysis, if they have a potassium level greater than 5.0 mEq/L and if they received an order for either 5 units or 10 units of insulin as treatment. Collected data includes: patient age, sex, height, weight, race, admitting diagnosis, home medications, episodes of cardiopulmonary arrest or rapid response records, mortality during hospital admission, pre-treatment and post-treatment serum potassium and blood glucose levels, dose of insulin, associated medications to treat hyperkalemia such as albuterol, sodium bicarbonate and sodium polystyrene sulfonate, as well as the use of calcium salts. Patients will be divided in to two groups based on whether they received 5 units (low dose group) or 10 units (high dose group) of insulin. The groups will then be compared to each other to assess differences in rates of hypoglycemia as well as differences in serum potassium levels from baseline.

Results: Pending

Conclusion: Pending

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-349

Poster Title: Risk factors associated with QTc prolongation in a geriatric patient population presenting to the emergency department with community acquired pneumonia

Primary Author: Nicholas Yarbrough, Memorial Hermann Memorial City Medical Center, TX; **Email:** Nicholas.Yarbrough@memorialhermann.org

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Terence Chau

Purpose: It is well known that patients with prolonged QTc are at an increased risk for life-threatening ventricular arrhythmias such as Torsade de pointes. Elderly patients presenting to the emergency department with pneumonia are a potentially high risk population for acquired QTc prolongation due to advanced age, comorbities, chronic medications, and the standard therapy commonly utilized to treat community acquired pneumonia. The objective of this study is to assess which factors (if any) are most associated with moderate to high risk QTc prolongation in elderly patients started on empiric antimicrobial regimens for community acquired pneumonia in the emergency department.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients 65 years and older who were given at least 1 dose of levofloxacin or azithromycin in the emergency department before being admitted to the hospital. Radiology and provider documentation will be used to assess intended empiric coverage for suspected pneumonia. The following data will be collected: patient age, gender, past medical history, home medications, and medications administered during hospital stay, electrocardiogram readings, radiology and laboratory data. All data will be recorded without identifiers and maintained confidentially. Baseline and longest subsequent QTc reading will be recorded and evaluated for moderate prolongation defined as a QTc of 470ms (480ms in women) to 499ms or an increase of 30 to 59ms from baseline; or severe prolongation defined as any reading greater than 499ms or increase greater than 59ms from baseline. Factors known to prolong the QTc will then be analyzed amongst patients with prolonged QTc and those without to determine which factors are independently associated with a prolonged QTc.

Results: Pending

Conclusion: Pending

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-350

Poster Title: Evaluating the impact of chronic obstructive pulmonary disease (COPD) exacerbation management recommendations on antibiotic utilization

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Additional Author (s):
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Purpose: Antibiotic prescription rates for treating acute exacerbations of chronic obstructive pulmonary disease (COPD) have been reported as high as 85% in the United States. Research has shown that over 50% of COPD exacerbations are due to viral etiologies. Elevations in procalcitonin levels can be seen in bacterial infections and can help guide the need for antimicrobial therapy in this patient population. The goal of this study is to evaluate the impact of management recommendations on antibiotic utilization in patients with COPD exacerbations.

Methods: This is a retrospective cohort study comparing antibiotic utilization in COPD exacerbation patients before and after the implementation of COPD management recommendations. Patients with a primary diagnosis of COPD exacerbation, at least 18 years of age, who had a procalcitonin level drawn within 24 hours of admission, and with an expected admission of at least 24 hours will be included. Exclusion criteria include patients presenting with severe trauma, sepsis, bacterial pneumonia, patients who require mechanical ventilation, and patients with an initial admission to the ICU.
Data collection variables include baseline characteristics, laboratory values, vital signs, microbiology cultures and sensitivities, antibiotic use data, and the final diagnosis. Using the implemented management recommendations, antimicrobial therapy recommendations are made based on initial and subsequent procalcitonin levels. The primary outcome of this study is antimicrobial duration of therapy. Secondary outcomes include hospital length of stay, 30-day readmission rates, and treatment failure defined as ICU admission, requirement of mechanical ventilation, or death.

Results: Data collection in progress

Conclusion: Pending

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-351

Poster Title: Comparison of patient risk factors for methicillin-resistant staphylococcus aureus (MRSA) vs. MRSA PCR screening in cardiac and orthopedic surgery patients

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Additional Author (s):
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Purpose: Methicillin-resistant staphylococcus aureus (MRSA) is a significant cause of health care-associated infections in cardiac and orthopedic surgery patients. Current guidelines recommend assessing multiple MRSA risk factors in addition to the MRSA colonization status, via MRSA polymerase chain reaction (PCR), to determine the need for the addition of vancomycin to standard surgical prophylaxis. Studies have yet to determine how MRSA PCR results correlate to established risk factors for MRSA surgical site infections. The purpose of this study is to determine the degree of correlation between risk factor-based screening and MRSA PCR based screening in cardiac and orthopedic surgery patients.

Methods: This will be a retrospective case-control study conducted at a 568 bed community teaching hospital. The study will compare the MRSA risk factors found in patients who had a positive MRSA PCR result versus patients that had a negative MRSA PCR result. Eligible patients were 18 years or older who underwent cardiac or orthopedic surgery and were screened for MRSA colonization via MRSA PCR testing. All included patient charts will be reviewed for baseline characteristics and the MRSA risk factors of diabetes mellitus, hemodialysis (ESRD), hospitalization within the previous 90 days, prolonged hospitalization greater than seven days, history of MRSA infection, antimicrobial use within the previous 90 days, and MRSA colonization status defined as a positive MRSA PCR test. The primary endpoint of this study is the correlation between MRSA risk factors and the MRSA PCR result.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-352

Poster Title: Impact of a sedation pathway on mechanically ventilated adults in the intensive care unit

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Purpose: Critically ill, mechanically ventilated patients require adequate sedation to optimize patient comfort and minimize unintended consequences of improper sedation. Over-sedation may lead to prolonged time on mechanical ventilation, while inadequate sedation may lead to pain, anxiety, and unplanned extubation. Current guidelines recommend targeting light sedation utilizing a sedation pathway that incorporates frequent assessment of pain, agitation, and delirium. The purpose of this study is to evaluate the potential clinical benefits associated with the implementation of a sedation pathway in an adult medical and surgical intensive care unit.

Methods: This is a retrospective, observational study conducted at a 629 bed community hospital. Data will be collected from a three-month time frame before and a three-month time frame after the implementation of a sedation pathway for mechanically ventilated patients in the intensive care unit (ICU). The comprehensive pathway was designed to target light sedation with frequent assessment of patients' pain, depth of sedation, and presence of delirium. Patients who were 18 years or older, admitted to the medical/surgical ICU, and mechanically ventilated for at least 24 hours will be included in the study. Patient charts will be reviewed for baseline characteristics, clinical outcomes, assessment results and frequency, and doses of sedatives, analgesics, and antipsychotic medications used during mechanical ventilation. The primary endpoint of this study is the duration of mechanical ventilation. The secondary endpoints include hospital and ICU lengths of stay, hospital mortality, percent of time target

sedation was achieved, percent of time delirium was present, incidence of tracheostomy, unplanned extubation, and ventilator associated pneumonia.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-353

Poster Title: Multimodal analgesia versus routine care pain management for pancreatitis: A medication use evaluation

Primary Author: Felicia Kasra, Methodist Dallas Medical Center, TX; **Email:** feliciakasra@mhd.com

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Purpose: Pain management is a critical factor that affects quality of life in patients with pancreatitis. Multimodal analgesia strategies, supported by current practice guidelines, can offer pain relief while minimizing opioid use and associated risks. Methodist Dallas Medical Center, a tertiary care teaching hospital, recently implemented a standardized multimodal analgesia management protocol to guide pain management in hospitalized patients with pancreatitis. The purpose of this study is to evaluate the use of multimodal analgesia in managing pancreatitis pain. Results will be assessed for implementation of pain management to improve both safety and efficacy.

Methods: A retrospective chart review of patients hospitalized with pancreatitis before and after introduction of the protocol will be performed. Data collected via electronic medical record review will include pain medication prescribing patterns (scheduled, as needed, and one-time medication orders). Doses of analgesic medications during the course of hospitalization for each subject will be recorded. The impact of protocol implementation on parenteral narcotic use, the transition to oral pain medications, and utilization of non-narcotic analgesics will be assessed. Usage of reversal agents will be analyzed for safety outcomes and patient reported pain scores will be assessed for managing pain control. All data will be recorded without patient identifiers to maintain confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-354

Poster Title: Evaluating micafungin use in an acute care academic community hospital

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Purpose: To determine prescribing patterns of micafungin in hospitalized adult patients, and evaluate clinical response and at Methodist Dallas Medical Center. The goal is to use this information to determine potential improvements that can be made in the utilization and management of micafungin.

Methods: A retrospective chart review of patients at Methodist Dallas Medical Center hospitalized from July 31, 2015 to July 31, 2016 will be performed to gather appropriate information. An electronic medical record query will be used to identify patients who were administered micafungin. Appropriate uses of micafungin at Methodist Dallas Medical Center are considered to be: candidiasis prophylaxis in post-liver transplant (up to 30 days post-transplant), treatment of invasive candidiasis, and empiric treatment for septic shock. Manual chart review will be performed to collect: diagnosis, blood culture results, micafungin dose, treatment duration, the presence of a beta-D-glucan assay, rate of discontinuation with negative blood cultures, subsequent Candida infection, subsequent Clostridium difficile infection, and risk factors for usage in septic patients as well as other data that is not obtained via the medical record query. Clinical outcomes analyzed will include disposition, length-of-stay, as well as mortality. All data will be recorded without patient identifiers and confidentiality will be maintained.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-355

Poster Title: Evaluating the use of aprepitant for postoperative nausea and vomiting (PONV) at an acute care academic institution

Primary Author: Jeremy Chen, Methodist Dallas Medical Center, TX; **Email:** jeremychen2@mhd.com

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Purpose: PONV is a complication seen during the postoperative period. Aprepipitant is an NK-1 receptor antagonist that works in the central nervous system to prevent acute and delayed vomiting. The FDA approved dose for PONV is 40 mg orally 3 hours prior to anesthesia induction. At Methodist Dallas Medical Center (MDMC) aprepitant is available to anesthesiology providers for use in high-risk patients with documented PONV risk factors. The purpose of this study is to evaluate safety and efficacy of aprepitant in the MDMC postoperative setting. Data obtained will be used to evaluate prescribing patterns and identify areas to improve cost-effectiveness.

Methods: A retrospective chart review of MDMC patients who were administered aprepitant 40 mg for prevention of PONV between January 1, 2015 and June 1, 2015 will be performed. To evaluate aprepitant efficacy, the incidence of nausea and vomiting 24 and 48 hours after surgery, patient specific risk for PONV as determined by Apfel score (predictors include female gender, prior history of PONV, nonsmoking status, and concurrent opioid use), and use of anti-emetic rescue therapy and/or concomitant prophylactic agents will be assessed. Review of documented adverse effects from aprepitant use will identify patient safety risks.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-356

Poster Title: Evaluation of the safety and appropriate implementation of the diabetic ketoacidosis and hyperosmolar hyperglycemia protocol at a teaching hospital

Primary Author: Jeena Jacob, Methodist Dallas Medical Center, TX; **Email:** jeena.jacob108@gmail.com

Additional Author (s):
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Ilka Ratsaphangthong

Purpose: Diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic syndrome (HHS) are severe metabolic complications occurring in patients with decompensated diabetes and can result in significant morbidity and mortality. Patients presenting with either of these hyperglycemic crises require timely diagnosis and appropriate medical management consisting of fluid resuscitation, insulin therapy, and electrolyte replacement. Methodist Dallas Medical Center (MDMC) has a computerized physician order entry for the initial management of DKA and HHS. The purpose of this medication use evaluation is to review the protocol's safety and appropriateness of implementation. Results will be analyzed for consideration of changes to the institution's protocol.

Methods: A retrospective chart review of all MDMC patients who were hospitalized between January 1, 2016 and May 31, 2016 and initiated on the DKA/HHS protocol will be performed. Data to be collected and analyzed include: admitting blood glucose, admitting anion gap, time for blood glucose to normalize, time to gap closure, time to initiation of titratable insulin drip or subcutaneous insulin regimen after gap closure, incidence of hypoglycemia, and adherence, both nursing and provider, to electrolyte replacement and fluid management.
Continuous data will be assessed for normality of distribution and the appropriate parametric (Student's t-test) or non-parametric analog (Wilcoxon Rank Sum) will be utilized to determine statistical significance. Categorical data will be analyzed using the Fisher's exact test. Descriptive analysis will also be performed as indicated.

Results: In progress

Conclusion: In progress

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-357

Poster Title: Evaluation of readmission rates among patients discharged on P2Y12 receptor inhibitors for the management of acute coronary syndrome

Primary Author: Kathleen Ubina, Methodist Dallas Medical Center, TX; **Email:** kathleenubina@mhd.com

Additional Author (s):
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Betina Daniel

Purpose: The use of P2Y12 inhibitors is a key management strategy following a cardiovascular event and can reduce the risk of a subsequent thrombotic event. These agents, however, are also associated with an increased bleeding risk. The purpose of the study is to evaluate the appropriate use, dosing, and monitoring of P2Y12 inhibitors for ACS compared to national guidelines recommendations and FDA approved indications. The primary objective is to evaluate readmission rates within 1 year of discharge related to a bleeding or thrombotic event. The secondary objective is to assess the impact of medication access on readmission.

Methods: The study follows a retrospective chart review study design and will include medical records of patients initiated on P2Y12 inhibitor maintenance therapy for acute myocardial infarction. The P2Y12 inhibitor agent prescribed during hospital stay and at discharge , along with dosing and indication, as well as cardiovascular procedures performed during hospitalization, and concomitant antiplatelet therapies during intervention or discharge, will be collected for review. Impact on hospital readmissions within 1 year of initiation of P2Y12 inhibitor maintenance therapy related to a thrombotic or bleeding event will be evaluated. The utilization of patient assistance programs will also be assessed. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-358

Poster Title: Evaluation of the impact of beta-lactam allergy on the management of gram-negative fluoroquinolone-resistant bacteremia in the community hospital setting

Primary Author: Sarah McDaniel, Methodist Hospital San Antonio, TX; **Email:** snmcdaniel@utexas.edu

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Purpose: Fluoroquinolone resistance has significantly impacted the management of gram-negative infections for decades. In certain parts of the United States, resistance rates approach 40 percent. It is imperative that clinicians appreciate this epidemiologic reality when selecting empiric therapy. However, in the setting of beta-lactam allergy many physicians are compelled to use non-beta-lactam alternatives, particularly fluoroquinolones. Beta-lactam allergy and subsequent use of a fluoroquinolone may lead to inappropriate empiric coverage. The purpose of this study is to evaluate the impact of beta-lactam allergy on the management of gram-negative bacteremia caused by resistant gram-negative pathogens.

Methods: The protocol for this study will be submitted to the Institutional Review Board (IRB) for approval and will consist of a multicenter, retrospective chart review completed at several community hospitals in the Methodist Healthcare System. A review of patients admitted over a 33-month period will be conducted to evaluate the management of fluoroquinolone-resistant gram-negative bacteremia in two patient populations: those with a documented beta-lactam allergy and those without. Inclusion criteria will be patients admitted for at least 24 hours who produced a gram-negative isolate from blood that was resistant to levofloxacin. Patients meeting the inclusion criteria will be divided into two groups: those with and without a documented beta-lactam allergy. Each group will be further divided into those that received a beta-lactam antibiotic and those that did not. The following parameters will be collected for all patients: bacteremia source, patient age, unit, presence of infectious disease consultation, type and severity of beta-lactam allergy, previous safe administration of a beta-lactam, antibiotic utilized for treatment, adequacy of empiric coverage and resolution of clinical symptoms

Results: Results will be presented at TSHP/Alcalde regional residency conference in the Spring of 2017.

Conclusion: Conclusions will be presented at TSHP/Alcalde regional residency conference in the Spring of 2017.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-359

Poster Title: Evaluating the impact of rapid microbiological diagnostics on the management of bacteremia due to extended-spectrum beta-lactamase (ESBL) producing Enterobacteriaceae

Primary Author: Michelle Kennedy, Methodist Hospital San Antonio, TX; **Email:** mkennedy4@angelo.edu

Additional Author (s):
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Purpose: Resistant gram negative pathogens are a continuous threat in the health care setting. Recent advances in rapid diagnostic technology have allowed for timely detection of such organisms. However, optimal utilization of such technologies remains challenging at many facilities. The objective of this study is to evaluate the impact of rapid diagnostic testing on early treatment of bacteremia due to ESBL-producing Enterobacteriaceae.

Methods: The protocol for this study will be submitted to the Institutional Review Board for approval and will consist of a multicenter, retrospective chart review conducted at three community hospitals. An evaluation of patients admitted over a 33-month period will be completed to evaluate the antimicrobial management of ESBL-producing Enterobacteriaceae. Inclusion criteria for review will be as follows: patients admitted for at least 24 hours who produced an Enterobacteriaceae isolate from blood that was resistant to a third-generation cephalosporin. Additionally, the following parameters will be collected: resistance patterns of isolates, presence of an infectious diseases consultation, empiric versus targeted therapy, time to optimal therapy, timing of PCR result publication, provider specialty, microbiological clearance, and time to resolution of infection symptoms.

Results: Results will be presented at TSHP/Alcalde regional residency conference in the Spring of 2017.

Conclusion: Conclusions will be presented at TSHP/Alcalde regional residency conference in the Spring of 2017.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-360

Poster Title: Antibiotic prescribing patterns in adults diagnosed with nosocomial pneumonia: Retrospective chart review

Primary Author: Sana Qureshi, Scott & White Memorial Hospital, TX; **Email:** sana.qureshi.1@gmail.com

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Purpose: Unnecessary broad-spectrum antibiotics and increased duration of therapy can lead to numerous negative patient outcomes. The most recent Infectious Disease Society of America guidelines for hospital-acquired (HAP) and ventilator-associated (VAP) pneumonia provide limited guidance on de-escalation of antibiotics, but have recommended a shorter duration of therapy for all patients of approximately 7 days. Anecdotal observation of the duration of therapy and oral antibiotics chosen for patients with nosocomial pneumonia at Scott & White Memorial Hospital indicates inconsistencies in prescribing patterns. Our study aims to review the current trends in prescribing patterns, focusing on duration and intravenous to oral therapy transitions.

Methods: A retrospective chart review will be conducted on nosocomial pneumonia patients admitted between August 25th 2015 to August 25th 2016. Inclusion criteria will be as follows: patients age 18 years or older with documented diagnosis of HCAP, HAP or VAP. Data will be collected with a focus on microbiological cultures, days of antibiotic administration prior to de-escalation to oral therapy, final oral antibiotic and total duration of therapy. Primary endpoints are to categorize the types of oral antibiotics these patients are transitioned to when completing therapy and the total duration of antibiotic therapy prescribed. Secondary endpoints will include time to de-escalations, length of stay, and 30-day readmission rate. All data will be maintained confidentially according to Scott & White Memorial Hospital protocol for private health information.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-361

Poster Title: Evaluation of inpatient management of supratherapeutic INR in warfarin patients

Primary Author: Alejandra Ibarra, Scott & White Memorial Hospital, TX; **Email:** alejandra.ibarra@bswhealth.org

Additional Author (s):
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Delaney Ivy
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Purpose: In 2012, the American College of Chest Physicians (ACCP) updated their guidelines to facilitate warfarin reversal in the setting of supratherapeutic INR. However, a recent study has demonstrated that only about 25 percent of vitamin K utilization is in concordance with ACCP guideline recommendations and has led to variability in the management of patients with supratherapeutic INR. The aim of this study is to evaluate Scott & White Memorial Hospital physician's prescribing patterns of vitamin K in patients with a supratherapeutic INR in comparison to 2012 ACCP Evidence-Based Management of Anticoagulant Therapy guidelines.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective review will be conducted from March 1, 2014 through August 31, 2016 to include adult patients on warfarin who received vitamin K in response to a supratherapeutic INR with or without bleeding complications. Patients diagnosed with cirrhosis or acute hepatitis will be excluded. The following data will be collected: patient age, gender, height, weight, race/ethnicity, indication for anticoagulation, INR goal, OBRI score, INR values, dose and route of vitamin K, number of doses of administered, time to target INR, incidence of minor or major bleed, location of minor or major bleed, hemoglobin, delay in procedure due to supratherapeutic INR, and diagnosis of stroke/VTE within 30 days of warfarin reversal. All data will be collected without patient identifiers and kept confidential. Reviewers will subsequently determine if vitamin K dose and route was concordant with the 2012 ACCP guideline recommendations.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-362

Poster Title: Antibiotic prescribing patterns in pyelonephritis

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Additional Author (s):
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Purpose: The Infectious Diseases Society of America (IDSA) recommends fluoroquinolones for the treatment of pyelonephritis. In facilities where resistance exceeds 10% alternative regimens augmented with ceftriaxone or aminoglycosides have been recommended. Nevertheless, practitioners routinely prescribe fluoroquinolones as monotherapy. Additionally, the IDSA recommends cautionary use of oral beta-lactams for the treatment of pyelonephritis due to high rates of resistance, inferior efficacy, and higher rates of relapse. Consequently, the use of oral beta-lactams for pyelonephritis remains unclear. This study is designed to retrospectively categorize antibiotic regimens prescribed for pyelonephritis and to collect data about the local antibiotic susceptibilities of urinary pathogens.

Methods: Once approved by our Institutional Review Board, this retrospective review will be conducted on patients with pyelonephritis admitted to a 636-bed teaching level I trauma regional health science center. Inclusion criteria will be as follows: patients at least 18 years of age, ICD-9 or ICD-10 code for pyelonephritis, and symptoms of pyelonephritis upon admission. Data collected will include: antibiotic choice, dose, route, frequency, duration, and the time from empiric therapy to targeted oral therapy. The primary endpoint is the incidence of prescribed empiric and targeted antibiotic regimens for pyelonephritis. The secondary endpoint is the antibiotic susceptibility rate of urinary pathogens.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 8-363

Poster Title: Evaluation of periprocedural bleeding rates in patients receiving rivaroxaban based on preprocedural hold times

Primary Author: Hannah Eberle, Seton Healthcare Family, TX; **Email:** heberle@seton.org

Additional Author (s):
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Purpose: Periprocedural management of direct oral anticoagulants is not well defined; hold times are taken from package insert and pharmacokinetic data because this subject has not been evaluated prospectively. Our main objective is to identify periprocedural major bleeding rates in patients receiving rivaroxaban and to determine what effect preprocedural hold times have on these rates. Secondary objectives include identifying the rate of clinically relevant non-major bleeding events and the rate of thrombosis.

Methods: This study will be approved by the Institutional Review Board. It will be a retrospective, multicenter, cohort study comparing bleeding rates in patients receiving periprocedural rivaroxaban based on hold time and renal function. Rates of bleeding will be compared between patients who had rivaroxaban held for the recommended time of three to five half-lives - at least 48 hours for CrCl greater than 30 mL/min or at least 72 hours for CrCl less than 30 mL/min - to those who had rivaroxaban held for less than the recommended time. Patients will be identified using ICD-9 codes for surgical procedures and a home medication database identifying patients receiving rivaroxaban 15 mg or 20 mg. Orthopedic, kidney, bladder, prostate, intra-abdominal, cardiac, and CNS procedures will be included; low risk bleeding procedures will be excluded. Exclusion criteria include thrombocytopenia, low hemoglobin, preprocedural bleeding, or unknown timing of last rivaroxaban dose. The following data will be collected: age, sex, height, weight, ethnicity, comorbidities, hemogram, serum creatinine, liver function tests, doses of rivaroxaban, concomitant medications that increase bleeding risk, type and timing of surgery, occurrence of bleeding, and receipt of blood transfusions. Given an estimated baseline event rate of 12 percent in the arm with shorter than

recommended hold times, we will need 358 patients to provide 80 percent power to detect a 67 percent reduction in event rate.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-364

Poster Title: Clinical outcomes of hospital-acquired and healthcare-associated pneumonia with and without empiric vancomycin in a non-critically ill population

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Kristin Mondy

Purpose: Hospital-acquired pneumonia (HAP) and healthcare-associated pneumonia (HCAP) are leading causes of hospital-acquired infections. Infectious Disease Society of America (IDSA) guidelines recommend empiric anti- methicillin-resistant Staphylococcus aureus (MRSA) therapy for this patient population. However, recent evidence suggests that many HAP/HCAP patients are not at risk for MRSA, and initial therapy should be tailored to patient-specific factors. Currently, there are no studies comparing outcomes of empiric vancomycin use in this setting. Thus, the objective of this study is to evaluate clinical outcomes of non-critically ill HAP/HCAP patients who receive empiric vancomycin compared to those who do not.

Methods: This study is a multi-center, retrospective cohort of non-critically ill adult patients diagnosed with HAP/HCAP. Retrospective chart review will be used to identify patients who presented with new-onset pneumonia with one or more risk factors for HAP/HCAP and received intravenous antibiotics for greater than 72 hours. Treatment groups will be defined as patients who received empiric anti-MRSA therapy with vancomycin versus those who did not. The primary endpoint is clinical success at the time of antibiotic completion or discharge on antibiotics. Clinical success is defined as patients who did not experience death, did not require admission to the intensive care unit, and did not switch or require additional intravenous antibiotic(s) due to treatment failure. Secondary endpoints include hospital length of stay, time to clinical stability, in-hospital all-cause mortality, time to therapy de-escalation, and 30-day readmission rate for pneumonia. Safety will be examined through incidence of nephrotoxicity. Categorical variables will be analyzed using Chi-square or Fischer's Exact test, while continuous

variables will be analyzed using Two-Sample t-test or Wilcoxon Rank-Sum based on variable distribution. Logistic regression will be used to determine predictors of clinical success.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-365

Poster Title: Does the Sepsis Core Measure impact discordance with local guidelines for first dose antibiotic prescribing in patients with sepsis from cellulitis?

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Additional Author (s):
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Dusten Rose

Purpose: In 2015, the Centers for Medicare and Medicaid Services (CMS) implemented the SEP-1 core measure, focused on sepsis treatment and outcomes. This measure provides accountability for very specific antibiotic selections which may not be consistent with clinical practice. Specifically, based on patient risk and local susceptibilities, cefazolin or vancomycin is recommended as first line therapy for cellulitis in local guidelines, yet both would be non-compliant as monotherapy for SEP-1. The purpose of this study is to determine if SEP-1 increases discordance with local guidelines for first-dose antibiotic prescribing in patients with sepsis from cellulitis.

Methods: The present study is a multi-center, retrospective chart review of patients aged 18-89 years old, admitted to the hospital with sepsis and severe sepsis, secondary to cellulitis. Patients will be identified with corresponding ICD-9 and ICD-10 codes between September 1, 2014 and September 1, 2016. SEP-1 was implemented in October 1, 2015, which will be used to categorize patients as either pre-SEP or post-SEP. Patients will be excluded if requiring vasopressor therapy, presence of multiple sources of infection, transfer from an outside hospital, history or risk of multi-drug-resistant organisms on admission, immunocompromised status, documented beta-lactam allergy, and/or confirmed pregnancy.
The primary outcome is to determine if SEP-1 increases discordance with local guidelines for first-dose prescribing in patients with sepsis from cellulitis. Secondary outcomes will include empiric coverage for methicillin-resistant Staphylococcus aureus or Pseudomonas aeruginosa, switch from initial antibiotic(s) selected to maintenance antibiotic therapy, efficacy of antibiotic selection based on culture results and the incidence of Clostridium difficile infections.

To achieve 80% power, an estimated 152 patients in each group are needed to detect a 15% difference in rate of guideline discordance based on an estimated 40% rate of discordance in the control group. Nominal data will be evaluated via a Chi-square analysis or Fisher's Exact test. A forward, stepwise logistic regression will be done to identify variables associated with guideline discordance.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-366

Poster Title: Cefepime with or without metronidazole versus piperacillin/tazobactam for the treatment of intra-abdominal infections caused by potential AmpC beta-lactamase producing organisms

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Additional Author (s):
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Purpose: A wide range of Enterobacteriaceae produce AmpC beta-lactamases, which confer resistance to penicillins and most cephalosporins. Recent studies have established cefepime as an effective treatment option for AmpC beta-lactamase producing organisms; however, the efficacy of beta-lactam/beta-lactamase inhibitors (BLBLI) is unclear. A BLBLI is potentially appealing for intra-abdominal infections as a single drug regimen with coverage of Enterococcus spp. and anaerobic organisms. The objective of this study is to determine if there is a difference in outcomes for patients with intra-abdominal infections caused by AmpC beta-lactamase producing organisms treated with cefepime with or without metronidazole versus piperacillin/tazobactam.

Methods: This multicenter, retrospective cohort study will include adults greater than 17 years of age with at least one intra-abdominal culture positive for an AmpC beta-lactamase producing organism (Enterobacter spp, Citrobacter spp, Morganella spp, and Serratia marcescens) that received intravenous cefepime with or without metronidazole or piperacillin/tazobactam as definitive therapy. Patients must have undergone at least one source control procedure during the hospital admission. The primary outcome is the composite of surgical-site infections, recurrent intra-abdominal infections, or death. Secondary outcomes include differences in the individual components of the composite outcome, length of stay from index source control procedure, microbiologic failure, length of antibiotic treatment, time to clinical resolution, and incidence of Clostridium difficile infection. Based on a 20% rate of composite complications, a sample size of 276 patients will be needed to achieve 80% power and to detect a 15%

difference in complication rate between groups. Pearson's Chi-square test will be used to analyze the primary composite outcome. For secondary outcomes for dichotomous variables, Pearson's Chi-square test or a Fisher's exact test will be used. For continuous variables, a Shapiro-Wilk test will determine if the data is parametric. The Student's t-test will be used for parametric data and the Mann-Whitney U-test will be used for non-parametric data. A Kaplan-Meier estimation and Cox regression will be conducted to describe time to clinical resolution.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-367

Poster Title: Comparison of dexamethasone versus prednisolone, prednisone, or methylprednisolone for the use of acute asthma exacerbations in hospitalized pediatric patients

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Purpose: Systemic corticosteroids play an important role in acute asthma exacerbations. The use of dexamethasone has been well studied in the emergency department setting, but there is limited research on its use for hospitalized pediatric patients. The purpose of this study is to determine if two days of dexamethasone decreases the length of hospital stay for pediatric patients hospitalized with an acute asthma exacerbation compared to a five day course of prednisolone, prednisone, and/or methylprednisolone.

Methods: This study is a single-center, retrospective, chart review of pediatric patients hospitalized for an acute asthma exacerbation. In October of 2013, Dell Children's Medical Center of Central Texas implemented a new pediatric asthma pathway which primarily utilizes a two day course of dexamethasone for a mild-moderate asthma exacerbation as compared to a previously used five day course of prednisolone, prednisone, and/or methylprednisolone. Pediatric patients who received dexamethasone or prednisolone, prednisone, and/or methylprednisolone for an acute asthma exacerbation between June 1, 2011 and January 31, 2016 will be identified. Patients 2-18 years old who are hospitalized for more than 24 hours with a principle discharge diagnosis of asthma and received a course of a corticosteroid will be included. The primary endpoint will be length of hospital stay between the two corticosteroid groups. Secondary endpoints include asthma symptom scores, milligrams of albuterol used in the first 24 hours, milligrams of ipratropium, time until albuterol at a frequency of every four hours, time until oxygen supplementation is no longer needed, days of systemic steroid use, readmission at 7 days, and cost of hospital stay. Using an assumed 10% decrease in length of

stay and a standard deviation of 0.7 days, 200 patients in each arm are required to achieve 80% power. Data collection will begin after Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-368

Poster Title: Effect of adjunctive clindamycin duration on time to resolution of complicated skin and soft tissue infections.

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Additional Author (s):
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Neil Pan

Purpose: It is not unusual to see clindamycin therapy utilized in combination with other antibiotics in complicated skin and soft tissue infections (cSSTI) due to its potential to reduce bacterial toxin production. cSSTI are frequently caused by bacteria that are capable of producing toxins that cause severe local and systemic effects. While clindamycin is recommended in several infection types, the optimal duration has not been defined. The purpose of this study is to discover if short-term or long-term adjunctive clindamycin affects time to resolution in cSSTI.

Methods: This is a multi-center, retrospective, cohort study assessing the effect of clindamycin duration on time to objective resolution. The inclusion criteria are as follows: age ≥ 18 years, diagnosis of cSSTI, ≥ 2 systemic inflammatory response syndrome (SIRS) criteria, and combination beta-lactam, vancomycin, or daptomycin therapy. Exclusion criteria include: pregnancy, immunosuppressed state, protein-synthesis inhibiting antibiotics besides clindamycin used during hospitalization, receipt of clindamycin for < 24 hours, concomitant infection, and diagnosis of diabetic foot infection, osteomyelitis, septic arthritis, endocarditis, meningitis, epidural abscess, or device-related infections. The definition of cSSTI for this study includes cellulitis, erysipelas, abscess, necrotizing fasciitis, and gas gangrene. The direct comparison will be between patients who receive ≤ 2 days of clindamycin and ≥ 3 days. Patient data collected will include the following: demographics, vitals and laboratory values, severity of illness, comorbidities, infectious etiology, surgical intervention, and antibiotics utilized. The primary endpoint will be time to objective resolution, consisting of the complete normalization of SIRS criteria. Secondary endpoints will include length of stay, readmission within 30 days,

and Clostridium difficile infection (CDI) rates within 30 days. The primary endpoint will be analyzed using a Cox's proportional hazards model. The secondary endpoints will be evaluated using Student's t- test or Mann-Whitney U test as appropriate for continuous data, and $\chi 2$ test for nominal data.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-369

Poster Title: Historical standard of care versus liposomal bupivacaine in video-assisted thoracoscopic surgery (VATS): a retrospective single-centered cohort study

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Additional Author (s):
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Purpose: Pain management is an essential component of postoperative care. Suboptimal analgesia contributes to poor coughing effort, resulting in retention of upper airway secretions. Additionally, inadequate pain control interferes with early ambulation, thus, predisposing patients to venous thromboembolic events. Liposomal bupivacaine is a locally-acting anesthetic, labelled for post-operative analgesia. Currently available data is sparse for post-operative analgesia in patients undergoing video-assisted thoracoscopic surgery (VATS). Prior to the approval of liposomal bupivacaine, our cardiothoracic surgeons utilized other locally-acting anesthetics. The overall purpose of this study is to determine whether liposomal bupivacaine contributes to better outcomes compared to historical standard of care.

Methods: This retrospective single-centered cohort study has been submitted to the Institutional Review Board for approval. The electronic medical record system will be utilized to identify patients who have undergone lobectomy by video-assisted thoracoscopic surgery (VATS). The following data will be collected: patient age, gender, weight, height, and visit number. Data collected will be divided into two groups based upon liposomal bupivacaine use or historical standard of care. The primary outcome will compare opioid consumption measured in morphine equivalence through post-operative day seven in patients that were administered liposomal bupivacaine vs historical standard of care. The secondary outcomes will compare length of hospital stay, intensive care unit duration, readmission within 30 days of discharge, overall non-opioid consumption measured in cumulative dose for each class of analgesic, naloxone utilization, pain scores through post-operative day seven, anti-emetic

medication use, and post-operative days until ambulation. Descriptive statistics will be used to summarize the data and nonparametric comparative tests will be used to assess differences between outcomes in the liposomal bupivacaine group and historical standard of care group.

Results: Data are being collected and analyzed and results will be described once complete.

Conclusion: Conclusions will be drawn from analyzed data and presented once complete.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-370

Poster Title: Rates of drug therapy problems in an inpatient heart failure population readmitted within 30 days of previous hospitalization

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Additional Author (s):
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Purpose: Medication regimen problems have been identified as contributory factors in heart failure exacerbations. The objective of this study is to characterize drug therapy issues occurring in heart failure patients readmitted within 30 days of an acute exacerbation. The information uncovered by this study will add to the body of knowledge on heart failure and identify a potential target area for drug therapy optimization and decreasing 30-day readmissions in this population.

Methods: After approval from the Institutional Review Board, this retrospective chart review will be conducted in chronic heart failure patients admitted to the hospital for an acute heart failure exacerbation then readmitted within 30 days after discharge. The inclusion criteria for this study will be: patients 18 years of age or older, a documented primary diagnosis of heart failure, readmission within 30 days of the previous discharge date. The following information will be recorded: patient demographics, primary diagnosis, medication allergies or intolerances, pertinent laboratory data, chronic comorbidities, and discharge medication list. The primary endpoint of the study will be identification and characterization of drug therapy errors in patient discharge medications including omission of therapy, failure to achieve target medication doses, and drug-drug or drug-disease interactions. Secondary endpoints include patient adherence rates to the prescribed regimen and analysis of the principal admission diagnosis upon readmission.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-371

Poster Title: Implementation of a pharmacy student-led medication history program in a large, tertiary pediatric emergency center

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Purpose: The Joint Commission defines the medication reconciliation process as “obtaining and maintaining an accurate, detailed list of all medicines taken by a patient and using this list to provide correct medicines anywhere within the health care system.” This process at a large pediatric institution is complex and inconsistently performed across transitions of care. Unfortunately, this has led to various medication-related errors which have impacted patient care. Errors are classified according to The National Coordinating Council for Medication Error Reporting and Prevention. This project aims to implement pharmacy student-initiated medication histories in the Emergency Center to identify and prevent medication-related errors.

Methods: This is a twelve-week pilot study evaluating the implementation of a medication history program within a large, tertiary pediatric Emergency Center. Pharmacy students were trained and validated by a pharmacist to complete medication histories for patients with admission status in the Emergency Center. Nurses within the Emergency Center were educated on the purpose and methods of this pilot study. When the patient transitions to admission status, the student completes the medication history with an established documentation form. The student compares the current medication list in the electronic medical record to the medication list obtained through the patient interview. The following discrepancies are documented on the data collection form: incorrect/missing dose, incorrect/missing route, incorrect/missing frequency, incorrect/missing medication, incorrect/missing allergy, incorrect/missing formulation, and discontinued/not taking medication. Additional information collected includes: time to complete medication histories, number of outside pharmacies used, total number of home medications in the record, and total number of medications reported

during the interview. Demographic information includes: sex, age, weight/height, race/ethnicity, preferred language, admission diagnosis, and primary diagnosis. The collected data will be consolidated and analyzed using descriptive statistics. The results will be used to justify additional resources to expand pharmacy-led medication histories within the institution. This study has been approved by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-372

Poster Title: Analysis of voriconazole dosing and serum concentrations in pediatric oncology patients

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Additional Author (s):
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Purpose: Voriconazole is commonly utilized for antifungal prophylaxis in immunocompromised patients and treatment for invasive fungal infections. Several pharmacokinetic studies conducted in immunocompromised pediatric patients indicate higher doses are needed compared to adults. Given the pharmacokinetic variability in pediatric patients, therapeutic drug monitoring (TDM) and the use of judicious and appropriately-timed serum measurements are required to ensure optimal therapy. This study will evaluate the dose (mg/kg) required to achieve a therapeutic voriconazole trough of 1 to 5.5 mg/L in pediatric oncology patients with possible, probable, or proven fungal infection.

Methods: This is a single center, retrospective study evaluating targeted dosing of voriconazole in patients less than 18 years of age with a diagnosis of acute lymphocytic leukemia (ALL) or acute myeloid leukemia (AML) and a concomitant possible, probable, or proven fungal infection. All patients were treated at a large pediatric academic medical center between October 1, 2010 and September 30, 2016. All serum voriconazole levels will be included. Pharmacokinetic analysis using Non Linear Mixed Effects Modeling (NONMEM®) will be conducted for comparison of our findings to current recommended dosing regimens. The primary outcome of this study is to identify the dose (mg/kg) required to achieve a therapeutic voriconazole trough of 1 to 5.5 mg/L in specific age groups. Secondary outcomes will include: confirmation of current proposed dosing strategies, validation of published pharmacokinetic models, and reporting of treatment related adverse outcomes. Where available, pharmacogenomics data will be collected and incorporated into our findings. All research has

been approved by the institutional review board and performed in accordance with the Declaration of Helsinki.

Results: Research in progress.

Conclusion: Research in progress.

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-373

Poster Title: Medication adherence in adolescents with systemic lupus erythematosus (SLE)

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Additional Author (s):
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Purpose: Hydroxychloroquine (HCQ) is a critical agent in the treatment of adolescents with systemic lupus erythematosus (SLE). HCQ has been shown to help prevent flares, protect against diabetes mellitus, thrombotic events, dyslipidemia, and overall damage accrual in these patients. Nevertheless, studies suggest nonadherence to be a pervasive problem, with only 30 to 60 percent of SLE patients taking medications as prescribed. Ultimately, lack of adherence is associated with poor disease control. Understanding the barriers to medication adherence is vital. The purpose of this study is to assess potential barriers to medication adherence, and to improve HCQ adherence in adolescents with SLE.

Methods: This is a single-center study. Face-to-face interviews between the pharmacist and the patient/caregiver will occur during regularly-scheduled clinic visits to assess specific barriers to medication adherence. The patient specific interventions will be derived from information gathered. The primary aim is to address the barriers to HCQ adherence. Secondary aims include the following: to describe the effectiveness of various tools in improving medication adherence and to obtain HCQ levels and correlate them with reported adherence. Concurrently, a new practice standard of monitoring HCQ levels will be implemented. HCQ levels should be collected at baseline, 3 months, and 6 months. Levels will be interpreted as follows: complete non-adherence: less than 200 ng/mL; partial adherence 200 to 1000 ng/mL; therapeutic/adherent: greater than 1000 ng/mL. A future, retrospective study will be planned to analyze the correlations of interventions to improved compliance/HCQ levels. Patients will be included if treated at the institution or clinic by the Pediatric Rheumatology Service during a 6 month study time frame. They must have a diagnosis of SLE and have received HCQ for at least 3 months.

These patients will be excluded: newly diagnosed, receiving HCQ for the duration of the study period, have known HCQ-induced retinopathy, patients with a history of HCQ intolerance, and pregnant.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-374

Poster Title: Effect of Inhaled Nitric Oxide on Respiratory Status in Patients with Congenital Diaphragmatic Hernia

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Additional Author (s):
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Purpose: Congenital diaphragmatic hernia (CDH) is a congenital malformation of the diaphragm resulting in lung hypoplasia and persistent pulmonary hypertension (PPHN) which often results in a need for extracorporeal membrane oxygenation (ECMO) and carries a high mortality rate early in life. General treatment of PPHN with inhaled nitric oxide (iNO) has been established, though the effects and recommendation to utilize iNO therapy in CDH patients is not well established due to minimal data in this population. Conducting this research will provide the pediatric community additional evidence regarding the efficacy of iNO and a better understanding of treatment options in this population.

Methods: An IRB-approved, retrospective chart review in a large quaternary care free-standing children's hospital will be performed on all patients with a diagnosis of congenital diaphragmatic hernia from October 1, 2010 to August 31, 2016. Baseline demographics will be collected: gender, gestational age, postmenstrual age, postnatal age, birth weight, diagnosis at birth or prenatally, syndromic versus non-syndromic CDH, additional comorbidities, position of the liver on echocardiogram, time to surgical repair, fetal tracheal occlusion, and lung-to-head ratio. The blood gas that triggered initiation of iNO treatment will be collected and 2 blood gases 30 minutes and 1 hour after treatment initiation will be recorded. The number of days of ventilation after the start of iNO and type of ventilation will be collected. The inhaled nitric oxide parameters will be collected and will include: dose, duration of therapy, methemoglobin levels, and days of iNO prior to ECMO cannulation. Concurrent medications will be recorded. Two oxygenation index readings will be recorded at baseline, specifically the OI that triggered the initiation of iNO, as well as two readings after iNO therapy. ECMO parameters such as

duration of ECMO, venoarterial or veno-venous ECMO, age at time of ECMO cannulation, and duration of ECMO therapy. Lastly, cost parameters in regards to ventilator time, iNO therapy, and ECMO therapy will be collected and time to discharge will be recorded.

Results: Results in progress

Conclusion: Results in progress

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-375

Poster Title: Tocilizumab use in children and adolescents with systemic juvenile idiopathic arthritis

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Additional Author (s):
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Purpose: Monoclonal antibodies (mAbs) have the ability to target cell specific factors and mimic endogenous immune factors. Tocilizumab is a humanized mAb that is active against interleukin-6 receptors. Interleukin-6 plays a key role in modulating T-cell activation and initiating the immune cascade. Tocilizumab is indicated for the treatment of systemic juvenile idiopathic arthritis (sJIA) in patients 2 years old or older. There are limited data on the use of tocilizumab outside the setting of a controlled clinical trial. The purpose of this project is to examine the clinical use of tocilizumab in a single-center population of patients with sJIA.

Methods: This is a single-center, retrospective analysis of use of tocilizumab in children and adolescents treated at our institution over a course of 6 years (October 1, 2010 – September 30, 2016). The primary objective is to describe usage patterns of tocilizumab in a cohort of children and adolescents treated at a large, academic free-standing children's hospital. Secondary aims include safety profile (including but not limited to rates of infection) and reasons for medication discontinuation. Patient inclusion criteria are: receipt of treatment from the Texas Children's Hospital Pediatric Rheumatology Clinic, 18 years of age or younger, and receipt of at least 1 dose of tocilizumab during the course of their treatment regimen for sJIA. General demographic and anthropometric data will be collected for all patients. The following dosing information will be documented: age at sJIA diagnosis, age at initiation of tocilizumab, dates of initiation, "place" in line of therapy (i.e., first, second), prior therapy received, dose of tocilizumab used, use of premedications to prevent infusion related reactions, use of concurrent immunosuppressive therapy, reason for discontinuation, date of discontinuation, and first agent used following discontinuation. Any infections and infection-related information

will be collected (including treatment). All research methods were approved by the institutional review board of Baylor College of Medicine.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-376

Poster Title: Evaluation of Aprepitant for Chemotherapy-Induced Nausea and Vomiting in Children and Adolescents with Acute Lymphoblastic Leukemia Receiving Methotrexate

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Purpose: The purpose of this study is to describe emetic control in patients with ALL who received aprepitant as part of an enhanced antiemesis regimen with methotrexate compared to those who received only a standard antiemesis regimen (i.e. no aprepitant) and to explore the potential drug-drug interactions between aprepitant and methotrexate by analyzing intra-patient methotrexate pharmacokinetics both with and without concomitant aprepitant.

Methods: A retrospective cohort analysis will be conducted on patients with ALL who received methotrexate (≥1 g to ≤ 5 g/m2/dose) with and without concomitant aprepitant at Texas Children's Hospital between October 1, 2010 and January 31, 2016.
Primary Objective: Evaluate emetic control when patients with ALL receive methotrexate concomitantly with aprepitant compared to not receiving concomitant aprepitant
•Each patient will serve as their own control to evaluate the impact aprepitant on the number of emetic episodes and PRN antiemetic rescue medication use
–Compare the number emetic episodes during 72 hours following methotrexate initiation or until methotrexate level < 0.1 micromoles/L (whichever occurs later), with and without aprepitant
–Compare number PRN rescue medications doses during 72 hours following methotrexate initiation or until methotrexate level < 0.1 micromoles/L (whichever occurs later), with and without aprepitant
Secondary Objective: Evaluate the pharmacokinetics of methotrexate for patients with ALL receiving methotrexate concomitantly with aprepitant compared to not receiving concomitant

aprepitant Perform and compare intra-patient pharmacokinetic analysis of methotrexate exposure with and without aprepitant co-administration
-AUC will be calculated using available data from methotrexate levels at times 0, 24, 36, 42 and 48 hours STATA 10.1 software (STATA Corp, College Station, TX, USA)
•Incidence of delayed methotrexate clearance
•Match patients by age, sex, methotrexate dose, phase and day of therapy

Results: In progress

Conclusion: In progress

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-377

Poster Title: Effect of exogenous antithrombin administration on anti-Xa levels in infants treated with enoxaparin

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Additional Author (s):
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Purpose: Infants are born with low physiologic levels of antithrombin, which could make adequate anticoagulation with enoxaparin more difficult to achieve. As a result, exogenous supplementation of antithrombin III has been utilized in order to achieve therapeutic anti-Xa levels more effectively. It is unknown whether exogenous antithrombin III has any effect on improving time to goal anti-Xa levels in infants being treated with enoxaparin. The purpose of this study is to determine the effect of exogenous antithrombin III administration on low molecular weight heparin anti-Xa levels in the context of enoxaparin dosing in infants.

Methods: This is an IRB-approved, retrospective chart review of infants at a large, free-standing, quaternary care children's hospital who received enoxaparin supplemented with antithrombin III from October 1, 2010 to August 31, 2016. The primary objective is to determine the median change in anti-Xa level within 12 hours of antithrombin III supplementation. The review will also analyze the median change in antithrombin III levels within 12 hours of supplementation, the correlation between median antithrombin III levels and anti-Xa levels at baseline, the median antithrombin III levels up to 3 days after supplementation, and include a subgroup analysis on premature infants. All patients less than one year of age admitted to Texas Children's Hospital, who received enoxaparin treatment supplemented with antithrombin III will be included. Patients will be excluded if they received additional anticoagulation within 3 days, had a predisposition to bleeding or thrombus formation, experienced renal dysfunction, if anti-Xa levels were drawn inappropriately, or if dosing was inappropriately managed. The data points to be collected include the patient's

chronological age, postmenstrual age, indication for enoxaparin, initial enoxaparin dose, final enoxaparin dose, number of dose changes, anti-Xa levels, antithrombin III levels, number of antithrombin III doses, antithrombin III dose administered, duration of antithrombin therapy, complete blood count, serum creatinine, urine output, and any noted bleeding.

Results: Research in progress.

Conclusion: Research in progress.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-378

Poster Title: Addition of a pharmacist in the management of septic patients in the emergency department

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Additional Author (s):
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Purpose: The Surviving Sepsis guidelines demonstrate that patients who do not meet the three-hour treatment bundles have increased morbidity and mortality. A major component of this is appropriate antibiotic administration within three hours. Many of these patients present to the emergency department and often they are not treated within the appropriate time window and thus are at risk for deleterious outcomes. Our objective is to see if pharmacist involvement at the bedside in patients presenting with sepsis in the emergency department can reduce antibiotic administration times and a consequent reduction in mortality.

Methods: This study is being submitted to the Institutional Review Board for approval. The electronic medical record (EMR) system will be used to identify patients who present to the emergency department with septic parameters. Criteria for inclusion will be all patients greater than 18 and presumed septic. The following parameters are of interest and will be identified: age, gender, temperature, blood pressure, heart rate, respiratory rate, white blood cell count, lactate levels, source-of-infection, Glasgow Coma Scale and diagnostic imaging. Using a pharmacist developed protocol, potentially septic patients will be identified upon presentation to the emergency department. If a patient presents with SIRS criteria >2 and/or a qSOFA score >2 and a presumed infection, pharmacy will notify physicians of the patient if an antibiotic has not been ordered. Pharmacists will evaluate appropriateness of antibiotic based on patient allergies, site/source of infection, previous cultures and susceptibilities. Pharmacy will have access to the PYXIS medication storage unit and will remove the antibiotic and provide it to the nursing staff at the bedside for administration. Pharmacists will follow up every 20 minutes to

ensure antibiotic is administered as quickly and safely as possible. Patient will be followed throughout the course of emergency department stay and antibiotic appropriateness will be reviewed based on any new information. Data will be compared against patients who receive the standard of care.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-379

Poster Title: Retrospective evaluation for culture correlation using a microarray-based, multiplexed rapid diagnostic instrument (Verigene system) for bloodstream infections

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Purpose: Early de-escalation of antimicrobial therapy with the use of rapid diagnostic testing has shown to improve patient outcomes, decrease length-of-stay, decrease costs, and ultimately lead to the decreased development of resistant pathogens. Despite this knowledge, it is still not used as the absolute identifier for de-escalation of therapy at this point because of the uncertainty of its ability to catch poly-microbial infections or other infectious sources. The purpose of this retrospective study is to assess the accuracy of the Verigene system to routine microbiology methods in identifying the true offending pathogen in patients with bacteremia at multiple community based hospitals.

Methods: This study was submitted to the Institutional Review Board for approval. This is an ongoing retrospective observational study via electronic chart review on patients who have been identified with positive blood cultures via traditional culture methods and underwent rapid pathogen identification with the Verigene system from January 1, 2015 to December 31, 2015. Information was collected from 4 different community hospitals within the same health-care system. Patients were included if they were >18 years of age and had a positive blood culture. Data collection includes pathogen identity, resistance markers, microbiology data from other sources, and central venous access points.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-380

Poster Title: Evaluating Patient Outcomes and Medication Adherence Framed by JNC 8 Treatment Protocols in Hypertensive Patients of African Descent: A Safety-Net Clinic Utilization and Effectiveness Assessment

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Purpose: The aim of this study is to utilize The Eighth Joint National Committee (JNC 8) treatment algorithm to evaluate the effectiveness and proper recommendation utilization of anti-hypertensive treatment among patients of African descent. Study results will inform medication adherence and medication therapy management.

Methods: Submission of this study will be sent to the Institutional Review Board for approval. A chart review will be conducted to evaluate active patients 18 years or older of African decent with a diagnosis of hypertension. Patients included in the study will be those who are prescribed a minimum of two anti-hypertensive medications and have two or more blood pressure readings dated between January 1-August 31, 2016. Data collected will include: demographics (age, gender, ethnicity), recorded clinical assessments (SBP, DBP, heart rate), comorbidities, current medications, and medication refill history. Medication adherence will be assessed per patient's refill history. All patient identifiers will be removed and maintained confidential. Primary endpoints will be the attainment of their respective goal per JNC 8 guidelines for hypertension dependent upon the patient's current health status and medication adherence while receiving treatment at San Jose Clinic. Comparative assessments will be along the dimensions of utilization of JNC 8 guidelines, blood pressure goals, and medication adherence. Appropriate sample size and comparison groups will be analyzed to report statistically significant results.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-381

Poster Title: Prescribing patterns of HMG-CoA reductase inhibitors

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Additional Author (s):
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Purpose: The 2013 American College of Cardiology and American Heart Association guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults has identified patients most at risk for experiencing an atherosclerotic cardiovascular disease event. These at-risk patients have been divided into the four Statin Benefit Groups. The primary objective of this study is to assess the adherence to the current guidelines of prescribers in the local internal medicine and family medicine clinics.

Methods: This project has been approved by the Quality Improvement Review Board. The study is designed as a retrospective chart review of patients who have been prescribed a HMG-CoA reductase inhibitor (statin) by one of the clinics' attending physicians. All patient data will be de-identified and kept confidential. Data collection will include patient characteristics such as age, gender, race, blood pressure, and tobacco smoking status along with pertinent lab values (lipid panel, liver function tests), medical history (history of diabetes, history of heart disease), and current medications. Any history of adverse drug events with HMG-CoA reductase inhibitors or hospital admissions with an atherosclerotic cardiovascular disease diagnosis will also be recorded. The patients' charts will be reviewed for any notations from the prescriber giving reasons for noncompliance with the guidelines. Researchers will assess if the prescribed HMG-CoA reductase inhibitor is of appropriate intensity based on the Statin Benefit Group the patients qualify under per the current guidelines.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 8-382

Poster Title: Impact of propofol on hemodynamic control in mechanically ventilated septic shock patients

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Purpose: Propofol is one of the sedatives of choice in the ICU settings due to its rapid onset and offset, allowing quick titration, daily sedation interruption, and less delirium effect. However, in septic shock patients, propofol-induced hypotension may complicate hemodynamic instability, necessitating dose increase or prolonged use of vasopressors. This study investigates the impact of propofol infusion on time to achievement of target blood pressure in mechanically ventilated patients with septic shock in comparison to other sedation agents.

Methods: This study will be submitted to the Institutional Review Board for approval. It is a retrospective, single-center, propensity-matched, cohort study conducting in septic shock patients on mechanical ventilation. Patients with septic shock will be identified by International Classification of Diseases diagnosis codes recorded in their electronic medical record. Prisoners, pregnant females, age less than 18 years, and those not on concurrent sedation and pressor, or not on mechanical ventilation will be excluded. Patients will be assigned to either the study group (propofol) or control group (other sedatives) based on their ICU sedation agent. The primary outcome is time to achieve target blood pressure, defined as mean arterial pressure of at least 65 mmHg or systolic blood pressure of at least 90 mmHg. Secondary outcomes include time to off pressor, duration of mechanical ventilation, length of stay, incidence of ICU delirium, and mortality. Data collection includes demographic information, baseline characteristics, and treatment progression such as age, weight, gender, comorbidities, primary sepsis sources, vitals, laboratory values, APACHE II and SOFA scores, Richmond agitation-sedation scale, medications, duration of treatment, as well as delirium and mortality incidence. The Mann-Whitney U or Student t-test will be used for continuous data while nominal data will be analyzed by chi-square or Fisher's exact test.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-383

Poster Title: Uninvestigated influences on acute kidney injury with concomitant piperacillin-tazobactam and vancomycin

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Purpose: Recent literature describes the risk of nephrotoxicity with concomitant use of piperacillin-tazobactam and vancomycin. While risk factors that influence the risk of developing nephrotoxicity have been studied, additional influences on risk for nephrotoxicity in this patient population remains uninvestigated. The objective of this study is to evaluate factors associated with development of nephrotoxicity in patients receiving concomitant vancomycin and piperacillin-tazobactam.

Methods: This study has been submitted to the Institutional Review Board for approval. A retrospective chart review will be performed to identify patients receiving vancomycin, piperacillin-tazobactam, or concomitant vancomycin and piperacillin-tazobactam. Instances of nephrotoxicity will be identified based on increase in serum creatinine from baseline. Risk factors for development of nephrotoxicity will be identified and evaluated including use of intravenous contrast agents, time from administration of intravenous contrast agents to development of nephrotoxicity, and use of proton-pump inhibitors. Use of statin medications and ascorbic acid will be evaluated for effect on development of nephrotoxicity. Evaluation will include the following groups: vancomycin monotherapy, piperacillin-tazobactam monotherapy, and vancomycin with piperacillin-tazobactam.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 8-384

Poster Title: Retrospective analysis of empiric antibiotic trends in emergency department patients

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Purpose: In the setting of possible or confirmed sepsis, the specific time frame for antibiotic administration has not been determined and no randomized controlled trials exist due to the ethical ramifications of such research. This pilot investigation was conducted to determine the need for further refinement of our institution's emergency department antibiotic protocols and identify administration time goals for patients with possible sepsis presenting to our emergency department.

Methods: This retrospective analysis utilized data from the emergency department of a 617-bed academic medical center in Memphis, TN. The investigators excluded patients with < 1 antibiotic order, those that did not receive any of the ordered antibiotics, and those with a length of stay < 1 day. Antibiotics were divided by coverage type (e.g. gram positive, gram negative, anaerobic, atypical) to more easily assess the type of therapy patients received first. The patient population was identified from an antibiotic use report that is reviewed each month by pharmacy services for the emergency department. Retrospective chart review and data collection was performed for patients included in the January 2016 antibiotic use report that met the inclusion criteria. The data were analyzed using SPSS software.

Results: Final results are pending.

Conclusion: Final results are pending.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-385

Poster Title: Measuring changes in adherence associated with incorporating tailored messaging in antibiotic counseling by community pharmacists

Primary Author: Mikaela DeBarba, The University of Texas at Austin College of Pharmacy/H-E-B Pharmacy, TX; **Email:** mikaelafarrell@utexas.edu

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Purpose: The CDC launched a program called "Get Smart About Antibiotics." The initiative states that community pharmacists play an integral role in promoting safe antibiotic use partly by educating the patient about properly taking antibiotics and the potential harms of antibiotic use, including antibiotic resistance and adverse drug events. According to a review of counseling practices, antibiotics are a therapeutic class that pharmacists were more likely to counsel on; however, discussing antibiotic resistance was not mentioned. The purpose of this study is to determine if pharmacists providing tailored messaging about antibiotic resistance during patient counseling improves adherence, thereby preventing antibiotic resistance.

Methods: Prescriptions for antibiotics at selected grocery-store based community pharmacies will be selected for special counseling. Informed consent will be requested of participants. This study will consist of three phases. Each phase will last six weeks and will include a follow-up phone call to measure adherence based on proportion of doses taken. Phase one will consist of usual care. Phase two will consist of usual care and a handout explaining antibiotic resistance, how it occurs, and how completing full courses of antibiotics helps prevent resistance. Phase three will consist of tailored messaging within the pharmacists' counseling to the patient. The tailored messages will teach the patient how antibiotic resistance occurs and how finishing the complete course of antibiotics can help prevent resistance. A handout about antibiotic resistance will also be distributed during the tailored message counseling session. Descriptive statistics will be reported for counseling group adherence and covariates (age, sex, type of infection, dosing frequency, level of education). Chi-squared analysis will be performed to

evaluate the relationship between counseling group and adherence status. ANOVA will be used for adherence measured as a continuous variable. Logistic regression will be used to assess the relationship between counseling group and adherence status while controlling for covariates. This proposed study will be submitted for review by the Institutional Review Board of The University of Texas at Austin.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 8-386

Poster Title: Optimization of automated dispensing cabinets to improve utilization and efficiency of dispensing workflow at an academic medical center

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Purpose: The purpose of this pre-post intervention study is to evaluate automated dispensing cabinet (ADC) utilization rates and the impact of ADC optimization achieved through a series of medication stock modifications. Pre- and post-optimization analysis will be conducted to evaluate the impact of changes made to the ADC. In addition, secondary endpoints for the study will evaluate the trends of Patient Safety Net (PSN) reports, cabinet stockout rates, in-basket messages, as well as medication redispenses.

Methods: Data reported from electronic health records (EHR) and ADC systems will be utilized to improve ADC inventory levels and stock. Approximately ten ADCs will be selected for optimization based on a combination of current utilization rates, number of stockouts, and number of PSN reports. Aggregated data will be analyzed for each cabinet for a period of two months prior to the optimization. The process of optimization will include medication addition and removals, par level adjustments, and pocket relocations. The primary endpoint of ADC utilization rate will be calculated by the total number of medication doses dispensed from an ADC divided by the total number of medication doses dispensed to that unit. Rates for secondary endpoints will utilize daily and monthly trends for comparison. Stockouts will be defined as the number of instances a medication is unable to be obtained from an ADC and a stockout bulletin is generated due to zero inventory. Patient Safety Net rates will be defined as the number of nursing reported occurrences in which a patient was delayed receiving his/her medication due to unavailability. In-basket messages will be defined as the number of new messages sent to the distribution pharmacists' requesting missing medication dosages. Redispensed medications will be defined as the total number of medications dispensed following the first preparation at the request of the unit nursing staff.

Results: n/a

Conclusion: n/a

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 8-387

Poster Title: Morphine versus methadone: differences in duration of therapy in the management of neonatal abstinence syndrome

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Purpose: Neonatal abstinence syndrome (NAS) is a constellation of symptoms as a result of sudden opioid withdrawal following birth from in-utero exposure to opioids. Treatment of NAS is important to prevent sequelae such as poor weight gain and seizures. Currently there is no guideline consensus for the ideal treatment of NAS. The goal of this research is to establish the mean duration of therapy (DOT) for neonates treated for NAS with morphine or methadone. Our hypothesis predicts that neonates who are treated with morphine require shorter DOT compared to neonates treated with methadone.

Methods: In August 2014, The Seton Healthcare Family Pediatric and Network Pharmacy and Therapeutics committees implemented a new NAS management protocol. The new protocol shifted the focus of NAS treatment strategies to a morphine-driven protocol compared to a methadone-driven protocol. Neonates diagnosed with NAS at Seton Healthcare Family will be identified through a national neonatal database. Neonates who received NAS treatment with methadone between January 2011 and August 2014 and morphine between August 2014 and October 2016 will be included in this study. The primary objective is DOT of each opioid. DOT of morphine-treated neonates will be compared the DOT of methadone-treated neonates. Hospital length of stay, need for adjunctive treatment (i.e., clonidine or phenobarbital), need for escalation in therapy (e.g., requiring a dose increase in opioid used), time to NAS capture (time which NAS symptoms were controlled and allowed for subsequent weaning of morphine), cumulative opioid dose received, number of neonates who experienced wean failure (e.g., requiring a dose increase in opioid used after weaning was initiated), and hospital readmissions within 30 days will be included as secondary outcomes. Assuming a 25% reduction in DOT, 28

neonates will be required in each arm to achieve 80% power. Data collection will begin after Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-388

Poster Title: Assessing treatment outcomes when switching HIV-1 infected patients from various antiretroviral therapy (ART) regimens to darunavir/cobicistat monotherapy

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Purpose: Protease inhibitor (PI) monotherapy for treatment of HIV-1 infection has been shown as an effective alternative to traditional combination ART in already virologically suppressed individuals. The newly introduced one tablet, once-daily formulation of the PI darunavir paired with the pharmacokinetic enhancer cobicistat (DRV/c) recently gained FDA approval based on previous studies showing bioequivalence to once daily ritonavir-boosted darunavir. No clinical studies have evaluated treatment simplification to DRV/c monotherapy. The primary objective of this study is to assess the proportion of patients who achieve or maintain virologic suppression after 12 weeks when switching from a previous ART regimen to DRV/c monotherapy.

Methods: This study will be submitted to the University of Houston Institutional Review Board for approval. Adult HIV-infected patients at Therapeutic Concepts (HIV outpatient clinic) and switched to DRV/c monotherapy from a previous ART regimen containing either combination ART or PI monotherapy with a different PI/pharmacokinetic enhancer combination (i.e. lopinavir/ritonavir) will be identified using electronic medical records. Eligible patients will include those with both detectable and undetectable HIV viral loads prior to switching. Patients with any prior major PI mutations to darunavir will be excluded from analysis in this retrospective study. All data will be recorded without patient identifiers and maintained confidentially. Demographics (age, sex, ethnicity, baseline ART regimen, and other concomitant medications) will be collected as well as self-reported adherence information to ART before and after switch. Baseline laboratory parameter data at the time/prior to switch including HIV

treatment surrogate markers (CD4, CD4% and HIV viral load), lipid parameters (triglycerides, high-density lipoprotein (HDL), low-density lipoprotein (LDL) and total cholesterol) and renal parameters (serum creatinine (SCr) and eGFR (estimated glomerular filtration rate)) will all be collected as well as at 12, 24 and 48 weeks after switch to DRV/c monotherapy. Any resistance testing including genotype results completed during study period after the switch will also be collected. Statistical tests including Pearson Chi-square and Student's t-test will be used for categorical variables and continuous variables, respectively.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-389

Poster Title: Correlation between antidepressant dose optimization and achievement of glycemic or blood pressure control

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Purpose: Depression is becoming a recognized cause of disability globally, and if left untreated has proven to become a chronic and recurrent issue. Furthermore, patients with depression and other comorbidities, such as coronary artery disease and diabetes, have been found to have worse health-related outcomes. While a number of studies have investigated the correlation between improvement in depression and chronic disease, none have reported on achievement of target doses of antidepressant therapies. The objective of this study is to determine the influence of antidepressant dosing optimization on reducing hemoglobin A1c and blood pressure.

Methods: This study is in the process of being granted approval from the University of Texas at Austin's and CommUnityCare Health Center's institutional review boards. It will be a retrospective, cohort study design and will include patients newly initiated on an antidepressant from January 2015 to September 2015. Patients must also have uncontrolled diabetes (hemoglobin A1c greater than 7 percent), hypertension (blood pressure greater than 140/90 mmHg) or both. Patients will be followed from initiation of antidepressant and for 12 months afterwards. Data collected will include demographic information, past medical history, encounter type and frequency, hemoglobin A1c, visit blood pressure, body mass index, patient health questionnaire scores, anti-hypertensive medications, antidiabetic medications, class of antidepressant, antidepressant dose and any dose changes. Primary outcome will be change in hemoglobin A1c and/or blood pressure at the end of study period in relation to achievement of antidepressant target dose, while controlling for baseline characteristics. Select secondary

outcomes include percent of patients to reach target doses and correlation between goal achievement and improvement in depression, while controlling for baseline characteristics. Primary outcome will be assessed through the use of a linear regression and secondary outcomes by using logistic regression. Significance level will be assigned as p value less than 0.05. Patient information will be released only to reviewers and will be de-identified at the earliest opportunity.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-390

Poster Title: Impact and feasibility of implementing a systematic approach for medication therapy management in the community pharmacy setting

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Additional Author (s):
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Purpose: Studies recognize the positive impact medication therapy management (MTM) has on patient outcomes and healthcare costs, but there are barriers to efficiently and effectively implementing it into the community pharmacy workflow. Such barriers include inadequate documentation systems, lack of time and staffing, and varied processes among sites. The purposes of this study are 1) to determine whether implementing a systematic approach to MTM has an impact on a) MTM completion rates and b) perceived MTM barriers; and 2) to assess pharmacists' and technicians' satisfaction and perceptions regarding feasibility of the process.

Methods: This pre-post study will include 4 central Texas grocery store-based community pharmacies. Pharmacists and technicians at each site will be trained on a systematic process to integrate MTM opportunities into pharmacy workflow. MTM opportunities will include both Comprehensive Medication Reviews (CMRs) and Targeted Intervention Program (TIP) opportunities. The primary outcome will be change in MTM completion rates (CMR or TIP completed/CMR or TIP available) pre- and post- process implementation. MTM completion rates will be extracted from each pharmacy's commercial MTM documentation system. An online survey instrument will be created to assess perceived MTM barriers (documentation software, patient engagement and follow-up) and perceptions regarding feasibility of the process (pre-work time, CMR/TIP counseling time, workflow efficiency) and satisfaction. MTM data collection will occur for 2 months post-process implementation will be compared to 2 months pre-process implementation with each site serving as its own control. The online survey will be administered at baseline and at 2 months post process implementation. Descriptive

statistics will be used and 0.05 will serve as the a-priori significance level. McNemar's test will be employed to compare paired MTM completion rates (pre-to-post) and paired t-tests will be used to assess changes (pre-to-post) in perceived MTM barriers. No patient-level data will be used. This study will be submitted to The University of Texas Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-391

Poster Title: Implementation of a community pharmacy and health-system partnership to improve patient outcomes in transition of care

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Additional Author (s):
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Purpose: The objective of this study is to examine the impact of utilizing community pharmacists to follow patients through a continuum of care from discharge to follow-up on hospital readmission rates, medication-related problems, and patient satisfaction.

Methods: This is a prospective cohort study in which hospitalized patients will receive face-to-face discharge counseling and follow-up phone calls 7 days, 30 days, and 60 days post-discharge by a community pharmacist. Pharmacists involved in the study are employed by a common community chain pharmacy. Partnership between the hospital and community pharmacy will allow pharmacists to use patient's electronic health records from both entities. Pharmacists will provide medication reconciliation, assess and resolve medication-related problems, and ensure optimal drug therapy. Discharged patients will only be included in this study if they pick up a majority of their prescriptions from the partnered community chain pharmacy. Patients will be enrolled and followed from January to June 2017.
The study will compare readmission rates at baseline and at conclusion of this pilot. Descriptive and multivariate statistics will be used for data analysis. The primary endpoint for this study is the change in readmission rate and the secondary endpoints include the type and number of medication-related problems addressed and patient satisfaction with the transitions of care process. Medication-related problems documented include but are not limited to: drug-drug interactions, duplicate therapy, adverse drug events, omission of therapy, suboptimal or supraoptimal therapy, and adherence barriers. Patient satisfaction will be measured by a survey

post-intervention. This study will be submitted for review by the Institutional Review Board of The University of Texas at Austin.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 8-392

Poster Title: Impact of a pharmacist-led educational session in prescribers' knowledge about pharmacogenetics testing and their interest in its availability in community pharmacy settings

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Purpose: To assess the effect of a pharmacist-led education session on physician knowledge about pharmacogenetics' role in patient therapy and interest in using a pharmacist for pharmacogenetic testing. Pharmacogenomics is the future of pharmacy and medical practice, as treatments become individualized per patient to provide specific care. The particular genotypes of enzymes can greatly affect how efficacious and safe certain medications are per individual. Currently, physicians and other healthcare providers do not have readily available access to pharmacogenetic testing through their local pharmacies and lack the ability or comfort in utilizing the new technology to provide personalized care for their patients.

Methods: This pre-/post-test study will be employed to determine changes in outcomes (knowledge and interest) of physician participants. The educational session will take place in a large room with appropriate technology for establishing an educational presentation. Inclusion criteria include any physician or physician representative whose patients fill prescriptions at HEB pharmacies with special emphasis on pain management and cardiology specialists. Exclusion criteria include the presence of any condition that would hinder the completion of a survey, such as cognitive impairment. Participants will be recruited over a 2 month period with the educational session to soon follow. Participants will be asked to complete a survey measuring their interest and knowledge regarding pharmacogenetics prior to the educational session and immediately following the presentation. The presentation is expected to last for 30-45 minutes. Differences in pre- and post-test scores will be determined using t-tests. This

proposed study will be submitted for review by the Institutional Review Board of The University of Texas at Austin.

Results: N/A (research in progress)

Conclusion: N/A (research in progress)

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 8-393

Poster Title: Impact of Pharmacist-Physician Co-Visits at a Primary Care Clinic in Patients with Uncontrolled Diabetes

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Purpose: The patient-centered medical home (PCMH) is a new model of primary care delivery that has been implemented in many outpatient settings. One type of PCMH is the physician-pharmacist collaborative management (PPCM) model. Studies have shown that PPCM models have made a positive impact on patient care and safe medication use, especially among patients with uncontrolled diabetes. To improve efficiency of healthcare delivery within CommUnityCare (CUC), the PPCM model was implemented in 2013 through coordinated pharmacist-physician co-visits. The purpose of this study is to evaluate the impact of pharmacist-physician co-visits on clinical outcomes among patients with uncontrolled diabetes.

Methods: This will be a retrospective multi-center cohort study and will include adults (18 years or older) with uncontrolled (hemoglobin A1c (HbA1c) of 8 percent or greater) Type 1 or Type 2 diabetes who were seen at CUC between 10/1/14 and 10/1/16. Cohorts include an intervention (at least 2 co-visits) or usual care (no co-visits, but at least 1 physician visit). The primary clinical outcome is mean change in HbA1c from baseline (within 1 year prior to the initial co-visit/physician visit) to follow-up (3 to 6 months post co-visit/physician visit). Secondary outcomes include mean change in fasting blood glucose, lipids and blood pressure levels, body mass index (BMI) and medication adherence; as well as adherence to ADA standards of care (documented immunizations, foot exams, eye exams, microalbumin/serum creatinine ratio, appropriate preventative medications). To assess changes from baseline to follow-up between the intervention and usual care groups, inferential statistics will be used. Chi-square or Fisher's exact tests will be used for categorical variables and student's t-tests and Mann Whitney-U

tests will be used for continuous/ordinal variables. Significance level will be p-value less than 0.05.

Results: Not Applicable

Conclusion: Not Applicable

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 8-394

Poster Title: Evaluation of patient-care outcomes and cost-savings due to implementation of a pharmacist-driven renal dose adjustment protocol

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Additional Author (s):
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Purpose: The objective of this quality-improvement study is to assess the impact of a pharmacist-driven renal dose protocol on medication safety, cost, and efficiency in pharmacy order verification.

Methods: In September 2016, a renal dose-adjustment protocol by which pharmacists can automatically renally dose-adjust pre-specified medications was approved through the institution's Pharmacy and Therapeutics Committee. The protocol allows a pharmacist to automatically renally dose-adjust medications for patients > 18 years of age with exclusion criteria for transplant patients, cystic fibrosis patients, and patients with conditions resulting in reduced muscle mass. Thirty-one medications were included in the protocol including 28 antimicrobials and a minority of other commonly renally dose-adjusted medications. The protocol requires a pharmacist to document the intervention in the patient's electronic medical record via a pharmacy consult note. Accompanying the protocol implementation will be a tool to help pharmacists identify patients that may require renally-adjusted medications. To standardize pharmacy practice and utilization of the protocol, a supplemental renal dosing chart will be made available to all pharmacists. The two-phase (pre-implementation and post-implementation) quality-improvement study will compare rate of adverse drug events secondary to inappropriately dosed medications, cost-savings, and time to pharmacist order verification. The study is currently under review for exemption by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 8-395

Poster Title: Analysis of the impact of missing doses and wastage of IV medications at an academic medical center

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Latresa Billings

Purpose: Missing medication messages are sent when a nurse cannot find a medication that should be administered. Missing doses have implications related to efficiency, efficacy, and cost. In April 2015, a medication tracker system, Pharmtrac, was implemented with one of its goals to help decrease the number of missing doses that have to be redispensed by tracking exactly where the drug is in the delivery process. The main objective of this project is to determine elements of the process which are affecting efficiency, workflow, and cost, and to model an improved methodology for data collection to help with ongoing waste tracking.

Methods: A list of some of the most frequently missing and most expensive IV medications will be identified based on both the number of missing doses and cost. Six months of missing dose data before Pharmtrac implementation will be compared and analyzed to six months of data after Pharmtrac implementation. The missing doses that had to be redispensed will be further looked at. The financial impact of both labor and product costs associated with the missing medications will be determined before and after implementation. The current medication distribution, delivery, and documentation process will be observed and evaluated. This will be done by performing a prospective two week observational study to more closely identify the point of distribution breakdown that create an opportunity for the missing doses and observe the details of the missing medication messages and tracking in Pharmtrac. Opportunities to help further decrease the number of missing doses and eliminate unnecessary costs will be identified through the observations and results of this project. Expected results include identifying the top causes of missing doses, areas in improvement in process, and cost from doses that are wasted in the hospital setting.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-396

Poster Title: Need for a standardized transitions of care program in an interdisciplinary academic family medicine clinic located in a border community

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Purpose: The Department of Family and Community Medicine at the Texas Tech University of Health Sciences Center-El Paso serves a diverse population along the US-Mexico border. Currently, there is a transitional care process to follow patients post-discharge from the inpatient family medicine service. However, the process does not meet CMS requirements for Transitional Care Management (TCM) billing codes. The aim of this project is to determine the need for a standardized transitions of care (TOC) program, identify the current TOC workflow, define improvements needed to utilize TCM billing codes, and estimate the potential reimbursement if a standardized TOC program was developed

Methods: A retrospective chart review will be performed via electronic medical record (EMR) review on patients 65 year and older with traditional Medicare fee-for-service insurance who were admitted to the inpatient family medicine service from October 1, 2015 to May 30, 2016. The primary objectives are to: 1) determine the percentage of patients being followed-up post-discharge in alignment with TCM follow-up requirements (i.e. specified time frame for telephone contact, clinic visits); 2) determine the amount of funding that could have been accrued for patients who were discharged and met TCM requirements (i.e. follow-up, 30 readmission free days); and 3) determine the number of missed opportunities in funding for patients with 30 readmission free days who did not meet the TCM follow-up requirements. Secondary objectives will identify the current standard of care for follow-up appointments and the scheduling of post-discharge patients transitioning from the inpatient service to outpatient care. For analyses of data, descriptive statistics will be utilized for the purposes of this quality

improvement project. The outcome of this project will help administrators better understand the impact of a standardized TOC program on patient readmission rates in a low-income, ethnically diverse, family medicine population. This project will be submitted for review through the University of Texas at El Paso and Texas Tech University of Health Sciences International Review Board (IRB).

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-397

Poster Title: Impact of Verigene assay and antimicrobial stewardship intervention on time to targeted antibiotic therapy for Staphylococcus aureus bacteremia at an academic medical center

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Purpose: Over recent years, significant developments in rapid diagnostic testing have decreased the time to microbial identification. Traditional microbiology culture and susceptibility testing takes days to provide results. The Verigene Blood Culture-Gram Positive (BC-GP) assay is an FDA-approved test that provides the genus, species, and resistance of bacteria detected from blood cultures in 2.5 hours. The purpose of the study is to investigate the impact of the Verigene BC-GP assay in conjunction with an antimicrobial stewardship intervention (ASI) on the time to targeted antibiotic therapy for the treatment of methicillin-sensitive Staphylococcus aureus (MSSA) and methicillin-resistant Staphylococcus aureus (MRSA) bacteremia.

Methods: A retrospective chart review will include all adult patients 18 years or older with a positive blood culture for MSSA or MRSA at UTMB Health. Patients will be included in one of three study groups: the pre-Verigene group (March 2013 to January 2014), the Verigene only group (March 2014 to January 2015), and the Verigene with ASI group (March 2016 to January 2017). The following patient characteristics and indicators of clinical status will be collected: demographic and co-morbidity data, TPN status, presence of Infectious Diseases consult, date of hospital and Intensive Care Unit (ICU) admission and discharge, maximum temperature, peripheral white blood cell count, and ICU status at time of the blood culture draw. Microbiology data will include date and time of culture collection, positive culture per gram stain and culture results. Antibiotic data collected will include: all antibiotics received by the patient and date and time antibiotics were initiated and discontinued. Additional data to be

collected include suspected source of infection and date of death, if available. The primary outcome is to determine the impact of the Verigene BC-GP assay with ASI on time to targeted antibiotic therapy. Secondary outcomes include hospital length of stay (LOS), ICU LOS, 30-day mortality, antibiotic costs, and 30-day readmission rate. The study will be submitted for Institutional Review Board approval.

Results: n/a

Conclusion: n/a

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 8-398

Poster Title: An analysis of the efficacy of continuous bupivacaine infusion pump (On-Q® pump) in bariatric surgery patients

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Purpose: With an increasing obese population nationwide, there has been an increase in the number of laparoscopic surgeries performed. However, there have been few studies evaluating different methods to reduce pain in bariatric patients after laparoscopic surgery. Bupivacaine infusion pumps (On-Q® pumps) have been shown effective in reducing post-operative pain in other surgical population, such as orthopedic patients. Therefore, the purpose of this project is to investigate whether the use of On-Q® pumps improves postoperative pain control and decrease length of hospital stay in bariatric patients.

Methods: This is a retrospective study where the electronic health records of adult patients who underwent bariatric surgery during the period of January 2015 until August 2016 will be reviewed. Patients who received a prescription for an opiod within 30 days before bariatric surgery will be excluded from the study. The following data will be collected: age (years), gender, BMI (kg/m2), presence of diabetes, hypertension, obstructive sleep apnea, hyperlipidemia, asthma, osteoarthritis, or depression, and operative time (minutes). The primary endpoints are length of stay (hours from surgery end-time to time of discharge) and postoperative narcotic use (measured in terms of oral morphine equivalent from surgery end-time to time of discharge), . Secondary endpoints include post-operative pain scores (scale of 1 – 10, with 0 being no pain and 10 being maximal pain), inpatient daily use of non-narcotics, complications due to opioids (i.e., respiratory depression requiring naloxone), and complications due to bupivacaine (i.e., bradycardia, cardiac arrest, heart block, ventricular arrhythmia). These secondary endpoints will be collected for the first 24 hours and the first 48 hours after surgery.

Results: In progress

Conclusion: In progress

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 8-399

Poster Title: Evaluation the Use of adjusted body weight (dosing weight) for vancomycin dosing in overweight patients

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Purpose: The 2009 IDSA/ASHP guidelines for vancomycin recommended to use actual body weight (ABW) for initial dosing in all patients, which may expose overweight patients to a large daily dose of vancomycin. At our institution, for non-dialysis patients, those with ABW above ideal body weight (IBW) by at least 30% will receive vancomycin 10-15 mg/kg/dose based on adjusted body weight (AdjBW). For other non-dialysis patients, they will receive vancomycin dose calculated using ABW. The objective of this retrospective study is to assess the appropriateness of using AdjBW for vancomycin dosing in overweight patients compared to using ABW in normal weight patients.

Methods: All adult patients with pharmacy consult for intravenous vancomycin from August 2015 to August 2016 will be retrospectively identified using a searchable patient database. Patients will be included if they had baseline creatnine clearance of at least 60 ml/min, received at least three identical maintenance vancomycin doses, and had at least one trough level drawn at stead state. Patients will be excluded if they have acute kidney injury (AKI) on admission or prior to first trough level. The following data will be collected: age, gender, weight, height, serum creatinine (Scr), vancomycin indications, loading and maintenance dosing regimen, and concurrent nephrotoxic medications. Creatinine clearance, IBW, body mass index, and AdjBW will be calculated. The primary outcome is the proportion of patients achieving therapeutic vancomycin level (10-20 mg/L) at first trough. Secondary outcomes include the proportion of patients with subtherapeutic (< 10 mg/L) or supratherapeutic (> 20 mg/L) level at first trough and proportion of patient with AKI (SCr increase by 0.5 or 50% from baseline) after first level until discharge.

Results: In progress

Conclusion: In progress

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 8-400

Poster Title: Assessing federally qualified health center providers need for clinical services provided by community pharmacists

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Purpose: Community pharmacists can play a key role in managing patients' health by providing medications, counseling, point of care testing, addressing adherence issues, and more. What is unknown are the clinical activities and services other health care providers would like to see community pharmacists provide.
The purpose of this study is to Identify the clinical activities Federally Qualified Health Center (FQHC) based health care providers would like to see community pharmacists provide in the care of patients.

Methods: A survey is emailed to the Federally Qualified Health Centers (FQHCs) in Texas to be completed by all healthcare providers. A Community Pharmacist who has a relationship with that FQHC emphasizes the importance of taking the survey either through email, phone call, or walk in.
The health care providers will provide demographic information such as their health care discipline, years of practice, and their specialty. The providers will be asked to identify the clinical services they believe a community pharmacist can provide, which clinical services will benefit their practice and record any additional services they would like to see provided by a community pharmacist.
The results will be collected and descriptive analysis will be conducted to assess trends of popular and unpopular services among the providers. The trends differences between disciplines will also be assessed. IRB approval has been submitted and is pending.

Results: Pending

Conclusion: Pending

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 8-401

Poster Title: Evaluating the effectiveness and feasibility of a pharmacist driven penicillin allergy testing program provided through an antimicrobial stewardship program

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Purpose: Allergies to penicillin and related antibiotics are reported in approximately 10% of the United States population. However, only about 1% have a true penicillin allergy. Penicillin allergic patients are more likely to receive broad spectrum antimicrobials, combination therapy and alternative agents. Overuse of broad spectrum antimicrobial agents promotes the emergence of multi-drug resistant organisms and Clostridium difficile infections. Many of these patients are classified unnecessarily, as over 85% of these patients are found not be allergic, and can safely tolerate penicillins. Penicillin skin testing can help antibiotic stewardship efforts, leading to improved efficacy, reduced antimicrobial resistance, and decreased costs.

Methods: The primary outcome measures is the percentage of patients that are not truly allergic to penicillin and cost saving when switching to alternative antibiotic's due to this negative allergy confirmation. These two primary measures will be analyzed using the chi-square and student-t test methods. The pharmacist will contact the patient's physician to receive authorization to complete the penicillin allergy skin test. The target population will be patients 18-65 years old in the inpatient setting with a penicillin or similar derivative allergy. Patients will be included in the study if they successfully meet the inclusion/exclusion criteria checklist sheet that the pharmacist will complete. Once they meet the criteria the antimicrobial stewardship team will confirm allergy with questionnaire and the patient must consent to skin testing. The skin testing will be performed in a two-step process according to the package insert instructions for benzylpenicilloyl polylysine (Pre-Pen). Appropriate safety measures have been included in the protocol for each test to minimize patient risks. The number needed to treat is between 30 and 100 and successful completion of the study on March 31st 2017. If successful

in meeting the primary outcome measures the penicillin skin testing study will become part of the antimicrobial stewardship program.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 8-402

Poster Title: Transitions of care: Randomized trial of pharmacist-led interventions to decrease hospital readmissions for patients with chronic obstructive pulmonary disease and heart failure after hospitalization

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Additional Author (s):

Purpose: Inadequate patient education and care coordination at transitions of care such as hospital discharge may result in increased hospital readmission. Patients with chronic disease may be at a higher risk for hospital readmission due to complex disease states and large numbers of medications. Current studies show that pharmacy-led interventions at hospital discharge may positively impact patient outcomes and decrease hospital readmission. The purpose of this study is to determine if pharmacy-led interventions during hospitalization and following hospital discharge among patients with chronic obstructive pulmonary disease and heart failure result in a lower 30-day hospital readmission rate.

Methods: In this randomized, controlled trial, patients 18 years of age and older with a primary diagnosis of chronic obstructive pulmonary disease or heart failure or a related diagnosis will be randomized to an intervention or control group. Patients in the control group will receive standard care including nursing and physician-provided education on all medications at hospital discharge and a follow-up phone call. Patients in the intervention group will receive standard care plus a pharmacist-led comprehensive medication review, a medication action plan and medication education prior to discharge. Barriers to medication adherence will be addressed during hospitalization. The pharmacist will call patients twice after discharge to discuss the patient's diagnosis and health status, treatment goals, medications, and what to do if a problem arises using a modified version of the post discharge follow-up phone call guide from Boston University's Project Red (Re-Engineered Discharge). Study participants receiving the pharmacist-led intervention are expected to have a lower 30-day hospital readmission rate compared to control subjects.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-403

Poster Title: Liposomal bupivacaine utilization for gynecologic procedures at a community hospital

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Purpose: Exparel, liposomal bupivacaine, is a nonopioid analgesic that is approved as a single-dose injection for postsurgical analgesia. Exparel utilizes the drug delivery system DepoFoam that is designed to slowly deliver bupivacaine over an extended period of time, elongating its pharmacologic effect. As a result of this prolonged analgesic effect, Exparel is considered a useful agent in various surgical procedures because it is thought to decrease opioid use post-surgery and decrease risks that come with using catheters or pumps. The purpose of the study is to evaluate the use of Exparel in gynecological procedures and the resulting patient outcomes.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be conducted on patients who received Exparel for gynecological procedures in the last year at Wyoming Medical Center. These patients will be matched with patients who received the same procedures but did not receive Exparel. Data collection will include: type of procedure, dose of Exparel used, length of hospital stay, use of patient-controlled analgesia (PCA) post-surgery, total opioid dose 24 hours after surgery, total opioid dose over entire hospital stay, and average pain scores during the first 24 hours after surgery. Results will be presented.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 8-404

Poster Title: Statin optimization in patients with diabetes at a family medicine residency program

Primary Author: Karsten Josie, University of Wyoming Family Medicine Residency Program, WY; **Email:** karsten.josie@gmail.com

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Purpose: In 2013, the American College of Cardiology/American Heart Association (ACC/AHA) Task Force published practice guidelines aimed at reducing atherosclerotic cardiovascular disease (ASCVD) in four high-risk patient groups. Patients with diabetes mellitus (DM) represent one of the groups that should be treated with statins for LDL cholesterol reduction. Even though these patients exhibit increased ASCVD risk, studies show that only about half of patients over 40 years old with DM are taking a statin.
The purpose of this study is to evaluate statin utilization and optimization in patients with DM at a family medicine residency program patient-centered medical home (PCMH).

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective review of de-identified data of patients with Type 1 and Type 2 DM between the ages of 40 to 75 years old will be obtained from the clinic electronic health record (EHR). Patients will be assessed as to whether they are on any statin therapy, which will then be further evaluated for statin intensity optimization based on the intensity of statin that the ACC/AHA guidelines recommend. The ACC/AHA guidelines recommend at least a moderate intensity statin in patients with DM between the ages of 40 to 75 years. Additionally, patients in this group with an estimated ASCVD risk greater than or equal to 7.5 percent would be considered optimized on high-intensity statin therapy. Patients not taking a statin or the recommended intensity of statin will be evaluated for precluding factors.
Results of this study will be presented to providers of the family medicine residency program by the primary researcher. The 2013 ACC/AHA guideline recommendations will also be presented with the study results to encourage providers to increase optimal statin use in patients with

high risk of ASCVD. Ongoing analysis will determine if this intervention improves statin utilization.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-001

Poster Title: Retrospective review of intravenous unfractionated heparin monitoring at Alaska Native Medical Center: Assessment of monitoring using antifactor-Xa versus activated partial thromboplastin time

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Purpose: The purpose of this review is to evaluate data surrounding the use of the antifactor-Xa (anti-Xa) based protocol for continuous infusion heparin monitoring at our facility. Prior to the implementation of this protocol in 2011, heparin dosing was titrated using activated partial thromboplastin time (aPTT). The most effective protocol to use remains questionable due to a known discordance of Anti Xa and aPTT levels present in the literature. This review will look at efficiency, cost, and safety of both strategies. After completion, this information will be shared with our facility to optimize patient care.

Methods: This study was deemed non-research and approved by the Alaska Area IRB. The review will evaluate data surrounding the use of the antifactor-Xa (anti-Xa) based protocol versus the activated partial thromboplastin time (aPTT) based protocol for continuous infusion heparin monitoring. All aPTT and anti-Xa lab values will be collected from two separate date ranges. One data set will be pulled from a year where an aPTT based protocol for heparin monitoring and one data set will be pulled from a year when the anti-Xa based protocol. The date ranges include January 2013-January 2014 and January 2009- January 2010. All data will be collected utilizing available reporting systems to depersonalize patient information whenever possible. To mitigate risk, any patient specific information that is accessed will be stored within password protected Microsoft Excel spreadsheets and Microsoft Word documents. Each data set will be evaluated by reviewing the number of lab draws per patient, time to therapeutic values, number of times patients were supratherapeutic or subtherapeutic, and how many

patients had both anti-Xa and aPTT drawn. Conclusions about the cost, how well the hospital follows protocols, and benefits of each test will be drawn from this study.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-002

Poster Title: Safety of patient-controlled analgesia in obstructive sleep apnea: a retrospective analysis

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Purpose: Patient-controlled analgesia (PCA) provides a method for quick pain relief, but carries significant risks that include respiratory depression and opioid overdose. Patients with obstructive sleep apnea (OSA) are among those at highest risk. The purpose of this analysis is to evaluate whether providers are addressing OSA risk prior to ordering PCAs. This includes utilizing the preoperative STOP-BANG risk scoring tool and appropriately ordering PCAs from the hospital's low dose order set. Analysis will include evaluating adherence to safety monitoring protocols and whether noncompliance with any of the hospital's PCA policies led to adverse events necessitating opioid reversal.

Methods: This study has been approved for exemption by the Western Institutional Review Board (WIRB). A report will be generated of all patients who received a PCA after any surgery, between the month prior to WIRB approval and the preceding 12 months. An estimated 1,800 patient charts will be generated in this report and will be reviewed for documentation of a completed STOP-BANG score and presence of OSA. Further data collection for patients with a STOP-BANG score greater than or equal to 5 and/or a history of OSA diagnosis will include: age, sex, surgical procedure, STOP-BANG score, history of OSA diagnosis, PCA order set used, medication start date, ordering provider and credentials, hospital unit, overlap of intravenous and oral opioids greater than 2 hours, evidence of continuous pulse oximetry and capnography monitoring, respiratory depression (less than 8 breaths per minute), and naloxone administration, including dose and time of administration from the PCA start time.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-003

Poster Title: Dexmedetomidine for the treatment of alcohol withdrawal in non-intubated patients in the intermediate medical care unit (IMCU)

Primary Author: Ian Ingram, Providence Alaska Medical Center, AK; **Email:** ian.ingram@providence.org

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Purpose: Dexmedetomidine is used off-label for the treatment of alcohol withdrawal, but little data exists outside of intubated patients in an intensive care unit. At this tertiary care facility, dexmedetomidine is used for alcohol withdrawal in non-intubated patients in the IMCU, but no specific protocol exists to guide appropriate prescribing. The purpose of this project is to create a guideline for appropriate dexmedetomidine use in this patient population. A medication use evaluation will be performed to determine whether dexmedetomidine is being used in accordance with the new guideline. Information from this evaluation may identify areas for quality improvement and patient safety.

Methods: A retrospective report using the electronic health record system will be generated for patients who received dexmedetomidine in the IMCU and had a confirmed diagnosis of alcohol withdrawal using ICD10 codes F10.230- F10.239 between January 2016 and August 2016. Patients will be excluded if they were under 18 years old, pregnant or incarcerated, received dexmedetomidine for an indication other than alcohol withdrawal, or if they were intubated before their first dose of dexmedetomidine. The following data will be collected: dose and duration of dexmedetomidine; concurrent use of benzodiazepines; frequency and total daily dose of benzodiazepines; CIWA scores prior to the first dose of dexmedetomidine and 24 hours after starting dexmedetomidine; whether or not the CIWA protocol was followed; intubation after initiation of dexmedetomidine; potential contraindications to dexmedetomidine (bradycardia, left ventricular dysfunction, atrial ventricular block, concurrent use of vasodilators or negative chronotropic agents); and adverse effects (bradycardia, hypotension, and seizures).

Data will be analyzed to determine whether patients treated during the assessment period met eligibility requirements for dexmedetomidine, whether dosing guidelines were followed for dexmedetomidine and benzodiazepines, whether goals of therapy were achieved, and whether there were any adverse effects attributable to the dexmedetomidine. If patient numbers permit, patients managed in compliance with the guideline will be compared to those who weren't to evaluate any differences in goal achievement or adverse effects.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-004

Poster Title: Intraperitoneal chemotherapy outcomes in gynecological malignancies: A single-center, retrospective study.

Primary Author: Alyssa De Castro, Providence Alaska Medical Center, AK; **Email:** alyssamae.decastro@providence.org

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Purpose: Ovarian cancer remains the most common cause of gynecological cancer-associated death in the United States. The NCCN guidelines endorse the use of intraperitoneal (IP) chemotherapy for optimally debulked stage II through IV disease, which accounts for 79% of newly diagnosed patients. Profound abdominal pain is one of the most common reasons for inability to complete all planned IP cycles. Our institution has been using IP bupivacaine to minimize IP chemotherapy associated pain. This study will evaluate the outcomes of patients that received IP bupivacaine before and after administration of IP chemotherapy.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients receiving IP chemotherapy and to collect data for the study. The following data will be collected: patient age, ethnicity, ECOG scores, type and stage of gynecological malignancy, type and dose of IP chemotherapy received, CA-125 levels, number of months before disease progression, and overall survival. If available, provider/nurse documentation will be reviewed to determine the side effects related to IP bupivacaine administration and the severity of abdominal pain associated with IP chemotherapy in the presence of IP bupivacaine use. Inclusion criteria are patients diagnosed with gynecological cancer who received at least one cycle of IP chemotherapy and received IP bupivacaine before and after administration of IP chemotherapy. Patients younger than 18 years old, with known drug allergy to bupivacaine, pregnant/breast feeding, and prisoners will be excluded. The primary outcomes are the progression free survival and overall survival of patients receiving IP bupivacaine before and after IP chemotherapy. All data with patient information will be stored securely in password protected electronic files to protect

confidentiality. Patient information will not be shared with any person or party not directly involved in the data collection or analysis.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-005

Poster Title: Clinical impact of pharmacist-led, hospital-based discharge medication reconciliation service

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Purpose: Medication reconciliation at transitions of care has been a Joint Commission National Patient Safety Goal since 2005. The objective of this study is to assess the impact of pharmacist-led discharge medication reconciliation in patients at high risk for readmission, and to improve quality of care. The Pharmacy Transitions of Care Service (TOC) was implemented in two phases. During phase one, a dedicated pharmacist, and pharmacy technicians provided the service. During phase two, the service team consisted of all clinical pharmacist staff, and dedicated pharmacy technicians. Patients were enrolled in the service if they met criteria for high risk of readmission.

Methods: This study was approved for exemption by the Western Institutional Review Board. This is a retrospective review of approximately 650 patients eligible for medication reconciliation via the Pharmacy TOC Service at this tertiary care community hospital between November 2015 and April 2016. Patients were enrolled in the service if they were identified as high risk for readmission, had a diagnosis of Chronic Obstructive Pulmonary Disease (COPD), or were receiving anticoagulation medications on admission. The following data will be gathered from the electronic medical record: Phase one, and phase two : initial enrollment and all reencounters during the 90 days post discharge which include: 30 day emergency department visits, 90 day emergency department visits, 30 day readmissions, 90 day readmissions, adverse drug events occurring within 30 days of discharge, adverse drug events occurring within 90 days of discharge, medications involved in adverse drug events, number of chronic (required for at least 30 days) medications on admit, number of chronic (required for at least 30 days) medications on discharge, length of stay in days for COPD exacerbation, length of stay in days for any return COPD exacerbation, number of times the patient was enrolled in TOC during

each of the two phases of TOC services. The TOC program will be assessed for clinical effectiveness during each phase, as well as during the overall program.

Results: NA

Conclusion: NA

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-006

Poster Title: Clinical impact of an antimicrobial stewardship program targeting Staphylococcus aureus bacteremia at a 401-bed, tertiary-care community hospital

Primary Author: William Barany, Providence Alaska Medical Center, AK; **Email:** william.barany@providence.org

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Purpose: Staphylococcus aureus bacteremia (SAB) is a serious medical condition with a mortality rate approaching 20%. Complications from SAB, including infective endocarditis and implanted hardware infection, further contribute to disease severity. Because of this, SAB is best managed through the consultation of infectious diseases specialty physicians. The purpose of this project is to evaluate whether an antimicrobial stewardship program (ASP) targeting SAB was associated with an increased rate of infectious diseases physician consultations, and whether these consultations improved clinical outcomes.

Methods: This project is a retrospective chart review of all patients admitted with SAB since implementation of an electronic medical record on March 1, 2011. Patients included in this study will be identified through utilization of a microbiology laboratory report of all S. aureus blood cultures. For inclusion, patients must be at ≥ eighteen years old and have had S. aureus blood cultures obtained on inpatient units or within the Emergency Department. Patients will be excluded if they meet any of the following criteria: pregnant, incarcerated, under 18 years old, expired within 48 hours of admission, or if their inpatient hospitalization duration was ≤ 24 hours.
Records that meet the above criteria will be evaluated for the presence of a formal infectious disease consultation for management of SAB to determine whether ID consultation rates have changed since implementation of the ASP in August 2013. Consultation rates between a baseline period and the three years following ASP implementation will be compared.
To determine if infectious diseases consultation improved clinical outcomes, the following parameters will be evaluated through a chart review: duration of bacteremia, verification of bloodstream clearance, echocardiogram evaluation (TEE or TTE), time to optimal and effective

antimicrobial therapy (including drug and dosing selection), 30 and 90 day mortality, 30 and 90 day readmission, length of stay, inpatient duration of therapy, and total planned duration of therapy.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-007

Poster Title: Medication use evaluation of gentamicin for empiric treatment in neonates at a level III neonatal intensive care unit

Primary Author: Lauren Dartois, 82004, CO; **Email:** lauren.dartois@uchealth.org

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Jeff Homann

Purpose: Gentamicin is commonly used in the neonatal intensive care unit (NICU) as empiric treatment for early-onset sepsis. A wide variety of dosing strategies have been studied. At Poudre Valley Hospital (PVH), neonatal providers order gentamicin via an order set with postnatal age and weight guiding the gentamicin dose. Often, antibiotics are discontinued at 48 hours when sepsis is ruled-out, but serum gentamicin concentrations are obtained if therapy continues. The purpose of this medication use evaluation is to determine the frequency and appropriateness of gentamicin levels, assess current prescribing practices, and evaluate the strategy used for dose adjustment.

Methods: A retrospective chart review was performed in neonates who received at least one dose of gentamicin in the NICU at PVH from June 1, 2015 to August 10, 2016. Patients were evaluated for gestational age at birth, post-natal age, initial dose, indication, and duration of treatment. If peak and trough levels were drawn, they were evaluated as subtherapeutic, therapeutic, or supratherapeutic. Clinical parameters such as axillary temperature, white blood cell count, serum creatinine, and microbiological cultures were also collected.

Results: A total of 211 initial orders for gentamicin were evaluated in 200 neonates. The average gestational age was 36.23 completed weeks of gestation (range: 25-42). Early-onset sepsis was the indication for 188 (89.1%) of the orders and the average gentamicin course was 3.7 days. An initial dose of 4 mg/kg every 24 hours (for patients less than or equal to 7 days old and greater than or equal to 1200 grams) was ordered 88.6% (187/211) of the time. Overall, 118 levels (56 peak and 62 troughs) from 200 neonates were evaluated. Of the 56 peaks, 41 were considered therapeutic (73.2%) and 32 of 62 troughs (51.6%) were within goal. For those levels that were not considered therapeutic, the initial dose was changed by the provider 31

times based on recommendations by the pharmacist. The two most common adjustments were to extend the dosing interval from 24 to 36 hours (22/31), or reduce the dose (4/31). However, these accepted adjustments were sometimes delayed or inconsistently implemented based on order entry processes.

Conclusion: Results indicate that early onset-sepsis was the most common reason for gentamicin use in the NICU. Although 62% (132/211) of gentamicin orders were discontinued after 48 hours or less, 118 drug levels were performed. Half of patients with levels performed required a dose adjustment that was universally accepted by providers. As a result, it is recommended to develop and implement a pharmacist-driven dosing protocol. This would help standardize the dosing references used and allow for a more consistent and effective process. Additional evaluation is recommended to assess the impact on the frequency of therapeutic gentamicin levels attained.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-008

Poster Title: Effect of pharmacist driven procalcitonin ordering on antibiotic duration in patients with hospital-acquired and ventilator-associated pneumonia

Primary Author: Nicholas Tinker, Centura Health Saint Anthony Hospital, CO; **Email:** ntinker86@gmail.com

Additional Author (s):
Alyssa Walker

Purpose: Recent Infectious Disease Society of America guidelines for the treatment of hospital-acquired pneumonia (HAP) and ventilator-associated pneumonia (VAP) provide a recommendation to use procalcitonin (PCT) along with clinical criteria to guide discontinuation of antibiotics. Despite these recommendations, the practice of ordering PCT and the interpretation of its value is often inconsistent, depriving providers of a valuable tool for determining optimal antibiotic therapy. The purpose of this study is to determine the potential impact of a pharmacist driven protocol for ordering PCT on antibiotic duration in patients with HAP or VAP.

Methods: This study will be submitted to the Institutional Review Board for approval. Education will be provided for pharmacists and providers about the implementation of a new protocol allowing pharmacists to order PCT in certain patients. The electronic medical record (EMR) will be used to identify eligible patients who meet one of the following criteria: an order for antibiotics with an indication for pneumonia entered greater than 48 hours after admission, a physician diagnosis of HAP, or a physician diagnosis of VAP. Eligible patients will be divided into two groups based on if their treatment began before or after the protocol was implemented. The following data will be collected for eligible patients: age, gender, indication, PCT, microorganism culture results, temperatures, white blood cell counts, and diagnoses in any admission during the study period. If available, duration and settings of mechanical ventilation will be collected. If not already ordered, pharmacists will order PCT for eligible patients based on the process outlined in the approved protocol. Provider documentation will be reviewed to evaluate clinical criteria and determine potential for antibiotic discontinuation. All data recorded will be maintained confidentially, and analyzed without patient identifiers. The

primary outcome of average duration of antibiotic exposure will be measured in days and compared for each group to identify the presence of a difference.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-009

Poster Title: Virtual pharmacist consultation services in an ambulatory care setting: a single site pilot

Primary Author: Chelsey Hess, Centura Health St. Anthony Hospital, CO; **Email:** chelseyhess@centura.org

Additional Author (s):
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Purpose: It is well documented that pharmacist intervention for complex medication management improves patient outcomes, however these services are not typically offered in primary care settings although the need has been studied. Virtual pharmacy is an evidence-based approach that allows pharmacists to extend their expertise to multiple locations without the burden of physical presence. Implementation could increase patient engagement and appropriate use of medications, leading to better health outcomes and system management. The purpose of this study is to implement virtual pharmacy services at a single ambulatory care clinic, and evaluate patient outcomes, as well as provider and patient satisfaction.

Methods: This is a prospective, observational, cohort study and will be submitted to the Institutional Review Board for approval. Patients to be seen by a pharmacist will be identified by running a report that will identify patients falling into at least one of three categories: polypharmacy (defined as patients taking 10 or more medications), geriatric risk (defined as patients 65 years and older taking at least five medications), and transitional care risk (defined as patients hospitalized within the previous 14-30 days unable to obtain an appointment with their primary care physician). Other patients that might be seen will be identified by their provider as needing pharmacy services. Patients meeting criteria will be scheduled for a 30 minute video conference call with a resident pharmacist, prior to their primary care appointment. The resident pharmacist will perform in-depth medication reviews with patients, then report findings and recommendations to providers via progress notes in the electronic medical record. Providers see the patients next, and may either accept or reject pharmacy's recommendations with opportunity for the patient to follow-up with the pharmacist for any

further questions/clarifications. The primary outcome is 30 day readmissions or emergency room visits for patients seen by a pharmacist. Secondary outcomes are number of pharmacy recommendations and provider acceptance rate, pharmacist driven avoidance of adverse drug reactions (ADRs), and patient and provider satisfaction with the service.

Results: N/A

Conclusion: N/A

Submission Category: Leadership

Submission Type: Research-in-Progress

Session-Board Number: 9-010

Poster Title: Evaluation overload: implementation of concentrated learning experiences to reduce unnecessary evaluations in an ASHP-accredited residency program

Primary Author: Ann Heble, Children's Hospital Colorado, CO; **Email:** aheble91@gmail.com

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Purpose: Within the competency areas for ASHP-accredited pharmacy residency programs, there are goals and objectives for which a resident must be evaluated throughout the residency year. While many goals may be taught and evaluated multiple times throughout the year, certain goals are achieved quickly and only need to be taught and evaluated once. Historically at Children's Hospital Colorado, residents have completed quarterly evaluations for multiple activities, which generated evaluation fatigue and decreased the quality of evaluations. Therefore, concentrated learning experiences were created to decrease unnecessary evaluations, improve evaluation quality and provide adequate feedback while completing the necessary goals and objectives.

Methods: Children's Hospital Colorado pharmacy residency program is an ASHP-accredited program consisting of four PGY-1 pharmacy residents and two PGY-2 pediatric pharmacy residents. We examined the ASHP goals and objectives in conjunction with each program's activities to identify goals and objectives fitting into a concentrated learning experience, or an experience with goals and objectives only needing to be taught and evaluated once throughout the residency year. After identification, a learning experience description was developed for each concentrated learning experience describing activities, associated goals and objectives, and methods for which they would be achieved. An evaluation was developed for each concentrated learning experience and is assigned to each resident and preceptor within Pharmacademic upon assignment of the activity. The resident and preceptor must complete the evaluation prior to the project due date. The program director will follow up with residents quarterly to assess their progress in completing the concentrated learning experiences. In order to evaluate the effectiveness and attitudes towards this process, outcomes will be compared between the 2015-2016 and the 2016-2017 residency classes and preceptors. A survey will be conducted between both groups and address opinions on number of evaluations, quality of

feedback, and completion of goals and objectives. The 2015-2016 residency class and preceptors will be surveyed in October 2016. The 2016-2017 residency class and preceptors will be surveyed upon completion of the residency program.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-011

Poster Title: Evaluation of use and cost effectiveness of fosphenytoin in a pediatric academic medical center

Primary Author: Meghan Kolf, Children's Hospital Colorado, CO; **Email:** meghan.kolf@childrenscolorado.org

Additional Author (s):

Purpose: The aims of this project are to evaluate the use of fosphenytoin with respect to appropriate use and prescribing patterns as well as waste and fiscal responsibility at a pediatric academic medical center. Current practice commonly involves fosphenytoin being ordered as a rescue medication to be kept at the patient's bedside upon admission to the neurological unit. This evaluation will examine medication use to determine if the existing prescribing patterns and use of fosphenytoin is in accordance with hospital and national clinical care guidelines and if preventable waste is occurring.

Methods: This study will be submitted to Organizational Research Risk and Quality Improvement Review Panel for approval at this institution. A retrospective review will be performed to evaluate the appropriate use of fosphenytoin ordered from January 1st 2015-January 1st 2016. Analysis will be done on all ordered doses during this time to evaluate usage by unit. All ordered doses will be randomized and 10% will be selected for further review. Orders selected will be reviewed and the following data points will be collected: number of doses dispensed, administered, and wasted, concurrent lab collection orders placed for fosphenytoin levels, if doses were administered after at least one dose of a benzodiazepine was administered, time between the last administration of a benzodiazepine and administration of fosphenytoin, and number of orders placed as part of an order set. To evaluate the fiscal aspect of medication use, estimated cost will be determined for doses ordered but not administered and added to the estimated cost of doses wasted for other reasons (i.e. expiration of medication prior to administration).

Results: N/A`

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Descriptive Report

Session-Board Number: 9-012

Poster Title: Implementation of a pharmacist-driven education program for at home administration of pegfilgrastim in pediatric oncology patients

Primary Author: Amanda Rounds, Children's Hospital Colorado, CO; **Email:** amanda.rounds@childrenscolorado.org

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Purpose: Pegylated granulocyte colony-stimulating factor, pegfilgrastim, is increasingly prescribed for outpatient use in pediatric oncology patients. This medication serves to stimulate the production of white blood cells and reduce risk of infection in patients receiving certain myelosuppressive chemotherapy regimens. Pegfilgrastim is available as a pre-filled syringe suitable for adult dosing. Outpatient administration is complicated for pediatric patients who require smaller doses. Education was historically completed by nursing staff prior to hospital discharge. Pharmacist-driven discharge medication consultation is essential to improve accuracy and reduce medication errors in pediatric patients who receive pegfilgrastim at home.

Methods: A comprehensive educational handout for pegfilgrastim was developed by a pediatric oncology-focused pharmacy resident and mentor. This educational handout contained proper storage, preparation, administration and disposal of pegfilgrastim for patient-specific pediatric doses using pre-filled syringes. Information was focused on accurate preparation of patient-specific pediatric dosing using images to display dose measurements. Education materials were reviewed by a multidisciplinary oncology team including pharmacy, physicians, nursing and nursing educators. A hospital policy on pegfilgrastim use and administration was updated to require use of educational handout during discharge consultation and the responsibility for discharge consultation was shifted from nursing to pharmacy personnel.

Results: Development and implementation of pharmacist-driven pegfilgrastim discharge medication consultation for pediatric oncology patients was successfully established. Multidisciplinary review of educational materials resulted in comprehensive completion of educational handouts for patients. Support for transition of discharge education was expressed by nursing and physician groups alike. Oncology pharmacy staff were well equipped to

complete thorough discharge medication consultation. Images displayed on educational handouts were useful in demonstrating appropriate dose measurements despite having pre-filled adult dose syringes to prepare medication from. Pharmacists involved felt more confident in teaching proper administration of patient-specific doses as well as ensuring patients and families could accurately prepare and measure doses at home.

Conclusion: Pharmacy expertise was instrumental in developing educational handouts for patients and families. Given the complication of properly preparing and administering pediatric doses from an adult dose pre-filled syringe, comprehensive education is necessary prior to outpatient use of pegfilgrastim. Pediatric patients face unique challenges with dosing and avoiding medication errors with manufactured products that are geared towards adults. Pharmacist-driven medication consultation may be utilized to ensure understanding of accurate dose preparation and administration for at home use of pegfilgrastim in pediatric patients. Future studies are needed to compare medication errors pre- and post-implementation of pharmacist-led education.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-013

Poster Title: Evaluation of the appropriate use of intravenous and oral sildenafil for pulmonary hypertension at a pediatric academic medical center

Primary Author: Esther Bae, Children's Hospital Colorado, CO; **Email:** esther.bae@childrenscolorado.org

Additional Author (s):

Purpose: Sildenafil, a phosphodiesterase type 5 inhibitor, is used off-label in pediatrics for pulmonary hypertension. Sildenafil has shown to improve exercise capacity and hemodynamics in the pediatric population. Sildenafil is currently available as an intravenous solution, oral solution, and oral tablet on the hospital formulary. The purpose of this evaluation is to identify patterns in prescribing and dispensing of the different formulations of sildenafil and to optimize the use and expenditure of sildenafil in pediatric patients based on literature.

Methods: The study will be submitted to the institution's Organizational Research Risk and Quality Improvement Review Panel (ORRQIRP) for approval. A retrospective chart review will be performed to analyze the appropriate utilization of sildenafil from September 1, 2015 to August 31, 2016. A list of sildenafil order numbers will be collected from EPIC, the electronic medical record, and then randomized in Microsoft Excel to generate a 5 percent sampling of the total orders. The following variables will be collected for data analysis: patient name, patient medical record number, medication order name, age at time of order, gender, weight, specific diagnosis, indication for use, dose, frequency of administration, dosage formulation, and duration of treatment. In addition, information on the drug acquisition cost, adjunctive usage of inhaled nitric oxide, and preparation of both intravenous and oral formulations will be collected. With the data obtained, a comparative assessment of the two different formulations will be completed. All recorded data will maintain confidentiality by omitting patient specific information.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Case Report

Session-Board Number: 9-014

Poster Title: Continuous aztreonam infusion in the treatment of multidrug resistant pseudomonas in a pediatric patient

Primary Author: Kailynn DeRonde, Children's Hospital Colorado, CO; **Email:** kailynn.deronde@childrenscolorado.org

Additional Author (s):

Purpose: Infections caused by multidrug resistant (MDR) gram-negative bacteria are becoming an increasing concern in the immunocompromised pediatric population. Current therapeutic options for MDR gram-negative infections are limited, and the development of new antimicrobials has been slow to catch up to the rise in resistance. Here we describe a three-year-old male, weighing 14.6 kilograms, who developed a MDR pseudomonas ventilator-associated pneumonia treated with continuous infusion aztreonam. The patient had a past medical history significant for DiGeorge Syndrome and impaired T cell function, Tetralogy of Fallot, tracheostomy dependence, reactive airway disease, and multiple admissions for respiratory infections, leading to multiple antibiotic exposures. He presented with ten days of fever, otorrhea, and increased respiratory distress, and was admitted for observation. He had a history of growing pseudomonas, and was started on vancomycin, levofloxacin, and metronidazole. The Infectious Disease Team was consulted and recommended to continue vancomycin, start meropenem 40 milligrams per kilogram per dose (mg/kg/dose) every eight hours infused over three hours, and to discontinue levofloxacin and metronidazole. Extended infusion meropenem was chosen as the patient had grown levofloxacin-resistant pseudomonas in the past, and there was concern for a resistant organism.

A bronchoalveolar lavage culture revealed 10,000 colony forming units (CFU) of pseudomonas aeruginosa and 200 CFU of methicillin-resistant staphylococcus aureus. Microscan identified a MDR pseudomonas, and Kirby-Bauer testing provided the following minimum inhibitory concentrations (MICs): Aztreonam 48 (resistant or R), Ceftazidime 256 (R), Ciprofloxacin 1 (susceptible or S), Meropenem 32 (R), Piperacillin/Tazobactam 256 (R), and Tobramycin 1,024 (R). As a result of the Kirby-Bauer testing, meropenem was discontinued and continuous infusion aztreonam was initiated. With his regimen of meropenem infused over three hours, the antibiotic serum concentration was calculated to be above the MIC for only 25% of the dosing interval. For gram-negative infections, the goal for serum concentrations is to be greater

than the MIC for 40% of the dosing interval, or even higher in the most acutely ill. Continuous aztreonam allowed for optimal time (ideally 100%) over MIC, and had the lowest induction potential for inducible beta-lactamase production. His aztreonam dose was calculated using equations published in a case series by Moriyama et al and are as follows: Loading dose = Cpeak (mcg/mL) x Vd (L/kg) x weight (kg) = 100 mcg/mL x 0.2 L/kg x 14.6kg = 292mg = 20mg/kg/dose; Maintenance infusion rate (mg/h) = Csteadystate (mcg/mL) x Clearance (L/h) = 100 mcg/mL x 1.1 L/h = 110 mg/hour = ease of dosing = 121.6 mg/hour (2,920 mg/day). We targeted a serum concentration of 100mcg/mL to aim for two times greater than the MIC while still using safe dosing for the patient. After a continuous serum level resulted as 51mcg/mL, an increased rate of 178.87mg/hr (294mg/kg/day) was initiated. This increased rate was chosen after calculating patient specific clearance and aiming for a serum concentration of 75mcg/mL for both efficacy and safety as adverse effects are associated with high doses.
Overall, the patient received 17 days of continuous aztreonam with concomitant ciprofloxacin for seven days. Ciprofloxacin was added due to a fever spike after becoming afebrile, and we were unable to get an aztreonam level after the dose increase. He also received two doses of cidofovir for adenovirus viremia detected on peripheral blood polymerase chain reaction testing. The patient improved clinically over this course, despite multiple tracheostomy cultures that continued to grow MDR pseudomonas. While it was challenging to determine the overall cause of symptoms and factors leading to resolution, upon discharge, he had clinically improved. We feel continuous infusion of aztreonam was an effective treatment for the patient, and a viable therapeutic option for him in the future.

Methods:

Results:

Conclusion:

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-015

Poster Title: Albumin: Evaluation of the utilization, administration, and cost-effectiveness in a pediatric academic medical center

Primary Author: Stephanie Pennington, Children's Hospital of Colorado, CO; **Email:** stephanie.pennington@childrenscolorado.org

Additional Author (s):

Purpose: Albumin is a blood product derivative used for large volume paracentesis, plasma volume expansion, and nephrotic syndrome, along with many other conditions. It is available in two different concentrations - 5% and 25% - each with their own indications, which is a common source of error. While albumin is a commonly used and essential medication, it may not the most cost-effective. This retrospective chart review will evaluate if albumin is being used appropriately, if the correct product is being prescribed based on indication, the cost associated with waste of doses, and the proper administration technique of the product.

Methods: This study will be submitted to Organizational Research Risk and Quality Improvement Review Panel for approval at this institution. A retrospective chart review will be performed on patients who received albumin, 5% or 25%, from September 1st, 2015 – September 1st, 2016. The patients who have received albumin during that time will be randomized and 10% of the patients will be evaluated. The following data will be collected: age, weight, hospital unit, serum albumin, indication, appropriateness of indication, albumin product used, appropriateness of product chosen based on indication, dose, number of doses received, if the dose was given, continuous or bolus administration, appropriate administration, length of infusion, and where the medication was dispensed from. The indications will be recorded and broken down into three categories: appropriate, conditionally appropriate, and inappropriate. To assess cost effectiveness of medication, the manufacturer of albumin stocked will be recorded and the cost will be compared to the cost of albumin products produced by other manufacturers. Also, the cost of the doses wasted as well as given inappropriately will be added together to determine the amount the hospital could have saved. Lastly, to ensure patient safety, the administration will be classified as appropriate or inappropriate based on the length of infusion and if a filter was used. There are no exclusion criteria for this study.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-016

Poster Title: Prophylactic Ertapenem Use in Elective Colorectal Procedures: A Pre and Post Intervention Analysis

Primary Author: Amelia Nelson, Denver Health Medical Center, CO; **Email:** amelia.nelson@dhha.org

Additional Author (s):
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Purpose: Ertapenem is a broad spectrum antibiotic. Guidelines recommend ertapenem for perioperative prophylaxis for elective colorectal procedures. Ertapenem is superior to cefotetan in preventing surgical site infections for these procedures. Ertapenem has not been shown to be more effective as prophylaxis for other procedures. At Denver Health, a review of ertapenem use for perioperative prophylaxis was performed in 2015 and showed opportunities to improve appropriate use. Two interventions were performed, surgeon education and removal of ertapenem from operating room Pyxis machines. The objective of this study is to evaluate ertapenem use as prophylaxis for elective colorectal procedures after intervention implementation.

Methods: This is a retrospective quality analysis study of patients who received at least one dose of ertapenem for perioperative prophylaxis. Patients will be identified through the electronic medical record system. The following data will be collected: ertapenem use, date of administration, type of procedure, date of procedure, and urgency of colorectal surgery. All data will be reviewed by a team of pharmacists and infection prevention specialists. Ertapenem use will be evaluated for appropriateness and categorized as appropriate or not appropriate based on type of surgery performed and urgency of colorectal procedure. This data will be compared to the pre-intervention data to determine if the intervention was effective or if further interventions are needed to optimize ertapenem use for perioperative prophylaxis.

Results: To be determined

Conclusion: To be determined

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-017

Poster Title: Dexmedetomidine use in a safety-net teaching hospital

Primary Author: Lana Al-Omar, Denver Health Medical Center, CO; **Email:** lana.al-omar@dhha.org

Additional Author (s):
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Purpose: Dexmedetomidine is an alpha-2 adrenergic agonist used for sedation of intubated, mechanically ventilated patients in an intensive care unit setting. It is also used for procedural sedation in non-intubated patients. In September 2012, dexmedetomidine was added to our institution's formulary. Given the high drug cost, prescribing restrictions were also implemented at that time. The objective of this study is to determine the extent to which our institution complies with its current restriction criteria for dexmedetomidine, identify any safety concerns, and further assess other potential indications for use.

Methods: Adult patients 18 years or older who have received dexmedetomidine from January 1, 2016 to June 30, 2016 will be identified based on dexmedetomidine charges using the electronic health record system. This quality assurance study will determine if our institution is complying with our restriction criteria, which includes use in awake fiberoptic intubation, management of shivering during hypothermic therapy after cardiac arrest, and use in adult intensive care units in patients who are ventilated with delirium or to assist with their transition from mechanical ventilation to noninvasive ventilation or extubation. Data to be collected includes: patient age, gender, weight, length of hospital stay, dexmedetomidine infusion rates, duration of dexmedetomidine use, reasons for initiating and discontinuing dexmedetomidine, ventilator status and number of days intubated (if applicable), number of days with delirium, mortality, cost, and specific exclusion criteria for our institution including concomitant neuromuscular blockade other than for intubation, and hemodynamic instability defined as a heart rate less than 60 beats per minute, systolic blood pressure less than 90 mmHg, heart failure, heart block, or myocardial infarction.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-018

Poster Title: An Evaluation of Clindamycin Use for Necrotizing Soft Tissue Infections (NSTI)

Primary Author: Ashley Schuler, Denver Health Medical Center, CO; **Email:** ashley.schuler@dhha.org

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Purpose: Necrotizing fasciitis, or necrotizing soft tissue infections (NSTIs), occurs in approximately 1500 patients annually. Although rare, mortality rates can range from 20% to 50%. The mainstay of therapy remains to be frequent surgical debridement, supportive therapy, and broad spectrum antibiotics. Clindamycin may decrease the toxin production of bacteria and is recommended for use in empiric antibiotic regimens. While useful for NSTI treatment, clindamycin is associated with severe gastrointestinal side effects, increased incidence of clostridium difficile infections, and increased resistance rates. The objective of this study is to evaluate the use of clindamycin in suspected and confirmed cases of NSTI.

Methods: This is a quality assurance project. The electronic medical record system will identify patients who have received one of three identified antibiotic combinations, vancomycin and clindamycin combined with either piperacillin/tazobactam, cefepime, or aztreonam, started empirically for the treatment of presumed NSTI between the dates of January 1st, 2015 and December 31st, 2015. Patients are categorized as diagnosis of NSTI or rule out of NSTI based on emergency room documentation of suspicion, operation notes, and discharge summaries. Patients who received one of the antibiotic combinations for non-skin and soft tissue infections will not be included in the study. The following data will be collected: patient age, gender, race, height, weight, body mass index, allergies, past medical history, antibiotics given, dates of initiation of antibiotics, dates of discontinuation of antibiotics, operation room trips, use of vasopressors, wound culture results, length of stay, clostridium difficile incidence, and initial labs of: c-reactive protein, white blood cell count, hemoglobin, serum sodium, serum creatinine, and blood glucose. All data recorded will be maintained confidentially. Laboratory risk indicator for necrotizing fasciitis (LRINEC) will be calculated. Data will be reviewed by clinicians to determine patient characteristics with confirmed NSTI diagnosis, average LRINEC

score for NSTI diagnosis, appropriate initiation of clindamycin based on LRINEC score, duration of clindamycin treatment, time to clindamycin discontinuation after NSTI was ruled out or last debridement, and side effects.

Results: To be determined

Conclusion: To be determined

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 9-019

Poster Title: Medication Therapy Management (MTM) pharmacist services in a homeless population

Primary Author: Kristin Lutek, Kaiser Permanente Colorado, CO; **Email:** kelutek@gmail.com

Additional Author (s):
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Purpose: Homelessness is a serious public health problem. Previous studies have investigated the benefit of interventions by pharmacists in a homeless population; however, evidence continues to be somewhat limited and variable. In an effort to expand clinical pharmacy and medication therapy management (MTM) services to the homeless population, pharmacist-led MTM services were established at a homeless shelter clinic in November 2014. The purpose of this study is to determine the impact of a pharmacist-led MTM visit within a homeless population on clinical outcomes, specifically blood pressure lowering. Additionally, to quantify the number and types of interventions made in this population.

Methods: A retrospective study was conducted from January 2015 to December 2015. All patients with a completed appointment with the clinical pharmacist at the Bridge homeless shelter during this time period were included in the study. The primary outcome was to determine the systolic and diastolic blood pressure lowering for hypertensive patients in the study.

Results: A total of 144 patients were were seen in the homeless clinic, with 86 of these diagnosed with hypertension. Of these 86 patients, 48 patients had at least 2 blood pressure readings recorded during the study period. Both systolic and diastolic readings decreased over the study period, by 4.2 mmHg and 1.8 mmHg, respectively. The average number of pharmacist interventions in this population was 1.3 ± 1. The most common intervention was education on medication adherence.

Conclusion: A pharmacist-managed clinic in a homeless population demonstrated potential for improvement in clinical indicators, including improvement in blood pressure readings. Drug

related interventions performed during clinic visits by a pharmacist were primarily education on medication adherence.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-020

Poster Title: Evaluation of non-activated 4-factor prothrombin complex concentrate use in adult patients at a community hospital

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Additional Author (s):
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Purpose: Kcentra, a non-activated 4-factor prothrombin complex concentrate (4F-PCC), is FDA-approved for vitamin K antagonist reversal in patients with acute major bleeding or need for urgent surgery or an invasive procedure. The purpose of this evaluation is to evaluate off-label use of 4F-PCC in adult patients at a community hospital.

Methods: All adult patients who received 4F-PCC from October 1st, 2014 to September 1st, 2016 at a community hospital will be included. All data will be collected and recorded without patient identifiers and maintained confidentially. The following data will be collected: age, gender, sequential organ failure assessment score, anticoagulation therapy (if applicable), indication for anticoagulation (if applicable), actual body weight, service and authorizing provider of 4F-PCC, administration location, off-label indication, dose, pre-international normalized ratio (INR) value (if available), re-doses given within 24 hours, coagulation lab parameters (prothrombin time, INR, activated partial thromboplastin time, platelet count, anti-Xa level, and thromboelastography parameters if available), hemoglobin, thromboembolic adverse drug events (defined as stroke, acute myocardial infarction, pulmonary embolism, or venous thrombosis following 4F-PCC administration), in-hospital mortality, and concomitant use of blood and factor products. Provider documentation will be reviewed to identify off-label use. Off-label indications considered appropriate based on supporting literature are direct oral anticoagulant reversal, reversal of coagulopathy of hepatic disease, and reversal of coagulopathy in trauma patients. The primary endpoint is appropriate use of 4F-PCC for off-label indications. Secondary endpoints include rate of achieving INR less than 1.5, normalization

of coagulation parameters, mortality, thromboembolic events, cost, and concomitant use of blood and factor products.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-021

Poster Title: Evaluation of heparin-induced thrombocytopenia (HIT) rates at a community hospital

Primary Author: Chelsea Goldsmith, Memorial Hospital – University of Colorado Health, CO; **Email:** chelsea.goldsmith@uchealth.org

Additional Author (s):
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Purpose: HIT is associated with significant disease burden and substantial use of hospital resources. Recent data suggests low molecular weight heparin (LMWH) lowers the risk of HIT compared to unfractionated heparin (UFH). This two part, retrospective chart review, seeks to evaluate incidence of suspected cases of HIT versus confirmed cases of HIT at a community hospital over one year. Primary outcome is to evaluate incidence of suspected and confirmed cases of HIT. Secondary outcomes include the comparison between the use of UFH and LMWH, and evaluation of 4 T scores for each platelet factor 4 (PF4) test ordered during hospital admission.

Methods: The electronic medical record system will identify patients who have had a PF4 test ordered during hospital admission over one year (January 1, 2015-December 31, 2015). The following data will be collected: patient age, sex, height, body weight, length of hospital stay, if patient had cardiac surgery or continuous veno-venous hemofiltration (CVVH) during stay, mortality rate, calculated 4 T score, the use of UFH, LMWH, and drugs used for treatment of HIT. If available, PF4 test and confirmatory test results, heparin allergy noted and HIT documented on patient hospital problem list. Inclusion criteria for this study will be patients ≥18 years old who had a PF4 test ordered during hospital admission over 1 year and exclusion from the study will be patient's with >1 PF4 ordered during same hospital admission and patient's who were in a clinical trial. Descriptive statistics will be use to analyze the data.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-022

Poster Title: Retrospective analysis to compare the safety and efficacy of a standardized versus weight-based PCA dosing protocol in a community hospital

Primary Author: Krista Sanchez, Parkview Medical Center, CO; **Email:** krista_sanchez@parkviewmc.com

Additional Author (s):
Melissa Balizan

Purpose: With sufficient guidance, patient-controlled analgesia (PCA) is an effective method for managing severe acute pain. However, imprecise dosing and monitoring parameters can increase the risk of over-sedation and respiratory depression, particularly in patients that are opioid-naïve, elderly, obese, or have certain chronic comorbidities such as chronic lung disease, and renal or hepatic impairment. To combat the risks of PCA, Parkview Medical Center switched from a weight-based dosing regimen to a standardized dosing protocol. The objective of this evaluation is to determine if standardizing the PCA dosing has reduced adverse events and demonstrates similar or improved pain scores.

Methods: A single-center retrospective chart review will be conducted as a quality assurance project in a community hospital. The study will evaluate patients that have been prescribed a fentanyl, morphine, or hydromorphone PCA. Patients who received the weight-based PCA dosing regimen from October 1, 2014- November 29, 2015 and those receiving the standardized dosing protocol from time of implementation, November 30, 2015, to October 1, 2016, were identified using the electronic medication dispensing reports. Data will be collected through electronic medical record review. The primary endpoints will assess safety of the new dosing regimen by comparing overall use of naloxone, and evaluate efficacy by contrasting average pain scores. Secondary endpoints to further assess safety include: sedation scores, occurrence of a respiratory rate of < 10 breaths/min, SPO2< 80% and hypotension defined as SBP< 90 mmHg. This study will be submitted to the Institutional Review Board for exemption, as no active patients will be included and all protected health information will be de-identified and destroyed upon completion. Ultimately, this project will serve to assess the appropriateness of the standardization of the PCA dosing protocol, and to determine if further steps are warranted to provide the safest and optimal pain relief to the patients of Parkview Medical Center.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-023

Poster Title: Impact of pharmacist led discharge counseling and bedside medication delivery on hospital readmission rates within 30 days of discharge

Primary Author: Leticia Ritz, Parkview Medical Center, CO; **Email:** lritz123@gmail.com

Additional Author (s):
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Purpose: With readmission rates increasing, hospitals have increased efforts to reduce complications at discharge. Hospital discharge is a critical time where patients are likely to have questions regarding medications, regimens and adverse effects. Many patients are unwilling or unable to pick up medications at discharge. This lag in therapy can cause serious adverse effects. With increased efforts to minimize complications, hospitals are now increasing the utilization of clinical pharmacists at discharge. The objective of this study is to determine the impact pharmacist led discharge counseling and medication delivery at the bedside is having on readmission rates within 30 days of discharge.

Methods: This study will be submitted to the Institutional Review Board for approval. Retrospective data collection will be conducted and reviewed to identify patients who have been readmitted within 30 days of hospital discharge. Among those patients who are readmitted, analysis of patients who received pharmacist led discharge counseling and medication delivery at the bedside will be conducted. The following data will be collected: reason for readmission, current disease states, medications at discharge, pharmacists who counseled patient, and the date of discharge and readmission. All data involving patient information will be recorded without identifiers and maintained confidentially and onsite at this institution. Data from patients who are readmitted within 30 days of discharge will be reviewed to determine: the impact of pharmacist led discharge counseling, which disease states are the most common for readmission, whether or not certain medications are a cause, or if medication delivery at the bedside is having an effect on readmission rates.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-024

Poster Title: Assessing community pharmacists' knowledge and comfort with natural products commonly used in cardiovascular disease

Primary Author: Veronia Guirguis, Safeway Pharmacy, CO; **Email:** veronia.guirguis@safeway.com

Additional Author (s):
Robert Willis
Tonna Farinha
Jeff Hamper

Purpose: The popular use of natural products can be due to a patient's perception of their presumed efficacy, safety and the misconception of fewer side effects. The ease of availability and low cost have also increased the use of natural products. The objective of this study is to assess the knowledge and comfort level of community pharmacists in recommending coenzyme Q-10, fish oil and garlic; natural products commonly used for cardiovascular disease, in accordance with their safety and efficacy. The outcome of this study was observing increase in knowledge and comfort of these particular natural products following educational materials provided.

Methods: The study design of this project will be a pre- and post- quiz. The study population will include all approximately 300 Albertsons and Safeway community pharmacists within the Denver Division. A $10 Starbucks gift card offered as incentive if a pharmacist completed the pre- and post- quiz. The primary investigator drafted two educational materials addressing coenzyme Q-10, fish oil and garlic, commonly used in cardiovascular disease in accordance to their efficacy and safety. Education materials included a narrated power point presentation in conjunction with a comprehensive handout discussing background, studies and recommendations of these products to targeted patient populations. These short educational materials, expected to be completed in less than 10 minutes. An identical pre- and post-educational quiz conducted via email to these pharmacists to gauge their knowledge and comfort level in recommending these specific natural products. The multiple-choice quiz measured common knowledge of these particular products including their efficacy and safety. Comfort level measured in a combination of Likert scale and open-ended questions. The

education materials used to gauge if they increased the pharmacists' knowledge and comfort level when recommending these natural products for cardiovascular disease.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-025

Poster Title: Evaluating patient satisfaction with pharmacist-administered specialty long-acting injectable antipsychotics in the community pharmacy practice setting

Primary Author: Emanuela Mooney, Safeway Pharmacy/Regis University, CO; **Email:** emanuela.mooney@safeway.com

Additional Author (s):
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Tonna Farinha

Purpose: Patient satisfaction plays an essential role in adherence to long-acting injectable antipsychotics (LAIAs). This ultimately can impact treatment outcomes and healthcare costs. There is a lack of published studies evaluating the impact of specialty injectable antipsychotics administered in community pharmacy practice settings, including patient satisfaction. This project was designed to evaluate patient satisfaction with an existing pharmacist-administered specialty long-acting injectable antipsychotic service in the community pharmacy practice setting.

Methods: This study will be submitted to the Institutional Review Board for approval. A patient questionnaire assessing patient satisfaction will be provided to patients receiving specialty long-acting injectable antipsychotics administered by a pharmacist in a community pharmacy setting. Satisfaction will be assessed using a Likert scale in the following areas: level of privacy, convenience of scheduling appointments, convenience of location, comfort with service provided by pharmacy, confidence in pharmacist's ability to administer the injectable medication, trust in pharmacist, pharmacist communication, pharmacist knowledge about service, duration of appointment, and likelihood of recommending service to others. Patients who have had LAIAs administered at an alternative setting (e.g. mental health clinic) will be asked to compare the service at these different locations. The questionnaire also includes a section on patient demographic characteristics, including: age, gender, highest education level, annual income, state of residence, number of years with current condition, and number of

months enrolled in this service. Patient questionnaires will be anonymous and will be provided and collected by administering pharmacists.

Results: To be determined.

Conclusion: To be determined.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-026

Poster Title: Implementation of an opioid reduction protocol utilizing alternatives for the treatment of pain in the emergency department of a level 1 trauma center

Primary Author: Michelle Maguire, Swedish Medical Center, CO; **Email:** michelle.maguire@healthonecares.com

Additional Author (s):
Rachael Duncan

Purpose: Pain is the number one reason for emergency room visits in the United States. Many emergency room physicians find it quick and effective to prescribe opioids for patients that present complaining of pain. However, not all pain is effectively treated with opioid medications. In some cases, opioids may be ineffective and do greater harm by contributing to abuse. By using an opioid-free, multimodal treatment approach to pain management, we hope to better control pain in patients entering the emergency department, as well as decrease the use of opioids in a population at high risk for abuse and misuse.

Methods: This is a retrospective pre- and post- implementation analysis of an opioid reduction protocol in the emergency department at Swedish Medical Center in Englewood, Colorado. A 2-month education program was provided by pharmacy to both nursing and physician staff regarding effective alternative non-opioid options for the treatment of pain. Staff huddles, weekly newsletters, lectures, and competencies were used to provide appropriate education. For patients arriving in the emergency department with a chief complaint of pain, physicians were also provided with a protocol containing a variety of non-opioid medication options per pain indication.
Chart review to identify numerical pain scores will be collected at baseline, 30 minutes, and 60 minutes. Data regarding use of naloxone therapy, amount of opioids used, and patient satisfaction scores will also be collected and compared to data prior to the implementation of the opioid reduction protocol. Secondary outcomes include analysis of effectiveness and adverse effects in patients treated with intravenous ketamine and lidocaine for pain. Pain reduction per indication including headache, musculoskeletal pain, renal colic, abdominal pain, and joint dislocation/fracture will also be analyzed. Primary and secondary outcomes will be analyzed using the chi square and student t test.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-027

Poster Title: Evaluation of daptomycin utilization at a large community hospital

Primary Author: Catherine McCall, University of Colorado Health - Memorial Hospital, CO;
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Additional Author (s):
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Purpose: Daptomycin is a cyclic lipopeptide antibiotic that exhibits rapid concentration-dependent bactericidal activity against a variety of Gram-positive organisms, including those resistant to vancomycin. Approved indications include the treatment of complicated skin and skin structure infection caused by susceptible strains of Gram-positive organisms as well as Staphylococcus bloodstream infections, including those with right-sided infective endocarditis. The primary objective of this medication utilization evaluation is to describe the indications, dosing, and duration of daptomycin therapy at our hospital and identify potential areas for quality improvement.

Methods: A retrospective chart review will be performed to include all patients greater than 18 years of age who received daptomycin at University of Colorado Health - Memorial Hospital, from January 1, 2016 to June 30, 2016. Patients will be identified through electronic medical records. Data to be collected will include patient demographics, indication for antibiotic use, daptomycin dose in mg and mg/kg, dosing weight, infectious disease physician prescribed or not, baseline creatinine clearance, creatinine phosphokinase monitoring, organism cultured with minimum inhibitory concentrations if available, other antibiotics given in the course of treatment, concomitant statin therapy, readmission or emergency department visits within 30 days, and mortality. Compliance to outpatient therapy will be assessed if daptomycin therapy was continued through the hospital outpatient infusion clinic. All data will be collected without patient identifiers and maintained confidentially. Descriptive statistics will be utilized to characterize daptomycin use and potential areas for quality improvement will be identified.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-028

Poster Title: Assessment of stress ulcer prophylaxis practice and rates of Clostridium difficile-associated diarrhea at a community hospital

Primary Author: Heather Johnson, University of Colorado Health Memorial Hospital, CO; **Email:** heather.johnson2@uchealth.org

Additional Author (s):
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Purpose: Proton pump inhibitors and histamine-2 receptor antagonists are often over-prescribed for the purpose of preventing stress ulcers during hospitalization. The association between gastric acid suppression therapy and Clostridium difficile-associated diarrhea (CDAD) has been well documented throughout the literature for hospitalized patients, with a risk ranging from 1.4 to 2.75 times higher among patients with proton pump inhibitor exposure compared to those with no exposure. The objective of this study is to determine whether or not there is a correlation between inappropriate prescribing of acid suppression therapy and increased rates of CDAD at the University of Colorado Health Memorial Hospital.

Methods: A retrospective chart review will be performed utilizing an electronic medical record to identify patients who had a positive Clostridium difficile toxin assay from January 1, 2015 to August 30, 2016. The following data will be collected: hospital service, comorbid disease states (gastroesophageal reflux disease (GERD), peptic ulcer disease, Helicobacter pylori-associated disease, cirrhosis, gastrointestinal bleed or variceal bleed), mechanical ventilation status, age, sex, body mass index, medication for acid suppression therapy and number of doses, antibiotics prescribed within ten days of positive CDAD diagnosis, hospital length of stay, appropriateness of acid suppression therapy, diet ordered and steroids prescribed within seven days of CDAD diagnosis. A predetermined set of appropriate indications for stress ulcer prophylaxis (SUP) and acid suppression will be used including: continuation of home regimen, patient-reported symptoms of heartburn/dyspepsia/epigastric pain/regurgitation/gastritis, erosive esophagitis, GERD, peptic ulcer disease, proven or suspected gastrointestinal bleed, Barrett's esophagus, admission to an intensive care unit plus coagulopathy or mechanical intubation greater than forty eight hours. All data will be recorded without patient identifiers and will be maintained

confidentially. A review of the incidence of CDAD in all patients prescribed SUP will also be undertaken. The primary endpoint of this review will be the incidence of CDAD associated with gastric acid suppressing agents prescribed for SUP and the percentage of inappropriate SUP prescribed to patients with an eventual diagnosis of CDAD.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-029

Poster Title: Evaluation of tacrolimus trough levels and impact on early acute rejection in heart transplant recipients

Primary Author: Samantha Steiger, Hartford Hospital, CT; **Email:** samantha.steiger@hhchealth.org

Additional Author (s):
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Jason Funaro

Purpose: Calcineurin inhibitors, specifically tacrolimus, are considered the cornerstone of anti-rejection therapy post heart transplant. However, to ensure safe and effective use, extensive therapeutic drug monitoring is required. Our objective is to assess if the time it takes to achieve therapeutic tacrolimus levels has any impact on the incidence of early acute rejection in heart transplant recipients. Additionally, we aim to assess whether the duration for which a patient remains within their goal therapeutic range in the first 30-days of transplant impacts the risk for early acute cellular rejection.

Methods: This study has been approved by the Institutional Review Board. A retrospective chart review of heart transplant patients at our institution from January 1, 2010 to December 31, 2015 will be performed. Patients will be excluded if they were under the age of 18 at the time of transplant, received a heart transplant outside of the date range specified above, died within 7 days post-transplant, or if they received a prior solid organ transplant. Heart transplant early acute rejection, defined as an acute cellular rejection episode within the first 6 months post-transplant, will be confirmed by two methods: [A] via biopsy proven acute rejection (BPAR), or [B] an episode of heart transplant dysfunction that demonstrates improvement after treatment with high-dose methylprednisolone. The 1990 and 2004 International Society for Heart and Lung Transplantation (ISHLT) criteria will be used to determine the severity of BPAR. Patient demographics, transplant characteristics, tacrolimus doses, tacrolimus trough levels, laboratory values, and histology outcomes will be collected retrospectively from both inpatient and outpatient electronic records to assess the primary and secondary endpoints. The investigators estimate that a finite sample size of approximately 80 patients will be evaluated. For descriptive analyses, continuous variables will be represented as a mean standard deviation

or a median with interquartile range, depending on distribution of the data, and categorical data will be represented as a percentage.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-030

Poster Title: Impact of delayed introduction of tacrolimus post-liver transplantation

Primary Author: Heather Kutzler, Hartford Hospital, CT; **Email:** heather.kutzler@hhchealth.org

Additional Author (s):
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Purpose: Calcineurin inhibitors (CNI), such as tacrolimus, are considered the cornerstones of immunosuppression after solid organ transplantation. However, calcineurin inhibitor-induced acute kidney injury (AKI) presents a challenge for safe use in the post-transplant setting. Delaying the start of tacrolimus to preserve renal function is a strategy commonly used immediately after liver transplantation to avoid AKI. The purpose of this study is primarily to identify the differences in allograft function by rate of biopsy proven acute rejection in patients who have a delayed CNI introduction versus those who do not. Secondary outcomes include renal function, allograft loss, patient survival, and infection.

Methods: The Institutional Review Board has approved this study. Adults 18 years of age or older who underwent liver transplantation at our institution from January 1, 2016 to July 28th 2016 were included in the study population. Patients were excluded if they are less than 18 years old, received dual organ transplantation at the time of liver transplant, or did not receive tacrolimus as an immunosuppressant during the first month after transplantation. Demographics, transplant characteristics, baseline co-morbidities, medication regimens, laboratory outcomes, biopsy proven acute rejection episodes, infection history, and laboratory parameters will be collected retrospectively from both inpatient and outpatient electronic records. Tacrolimus medication management will be assessed by time to initiation of therapy, starting dose, time until the goal trough level is achieved, and time within goal trough level during the first 30-days of transplant. Study data will be transcribed into an electronic format and will require a password for access.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-031

Poster Title: Utility of gabapentin in the management of inpatient acute alcohol withdrawal

Primary Author: Matthew Morrison, Hartford Hospital, CT; **Email:** matthew.morrison@hhchealth.org

Additional Author (s):
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Purpose: Benzodiazepines have been the mainstay therapy for managing the symptoms of alcohol withdrawal. However, this class of medications carries many undesirable side effects such as delirium and impairment in psychomotor function which can be detrimental to patient care. The goal of this proposed study is to evaluate whether the use of a high dose gabapentin taper as an adjunctive therapy for alcohol withdrawal will decrease benzodiazepine usage compared to patients who didn't receive gabapentin.

Methods: This study has been submitted to the Institutional Review Board for approval. A retrospective chart review will be performed to identify patients for inclusion into the study. Patients meeting inclusion criteria will be separated into two groups, a pre-gabapentin based alcohol withdrawal protocol group, and a post-gabapentin based alcohol withdrawal protocol group. The following data will be collected and utilized to evaluate endpoints: patient demographics, length of stay, baseline co-morbidities, total daily dose of lorazepam, days of gabapentin taper received, use of adjunctive medications, initial and highest recorded Clinical Institute Withdrawal Assessment of Alcohol Scale, Revised (CIWA-Ar) scores, daily Confusion Assessment Method for the intensive care unit (CAM-ICU) scores, recorded transitions to higher level of care, and number of rapid responses. The primary endpoint will be difference in average daily lorazepam usage in each cohort. Secondary outcomes will include length of stay, number of intensive care unit days, total rapid responses called, number of delirium free days, and rates of transferring to higher level of care.
We anticipate enrolling 50 patients in each group. Sample sizes were selected in order to afford 80 percent power to detect a relative difference of 33 percent between the null and alternative hypothesis using an alpha of 0.05 with a two-sided-t-test. Endpoints will be examined using appropriate statistical tests.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-032

Poster Title: Assessing venous thromboembolism in liver failure patients

Primary Author: Alyssa Boutin, Hartford Hospital, CT; **Email:** alyssa.boutin@hhchealth.org

Additional Author (s):
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Purpose: The purpose of this study is to evaluate whether hospitalized patients with liver failure receive appropriate venous thromboembolism (VTE) prophylaxis when admitted to a medicine service. The specific aims are to determine the rate of VTE prophylaxis in hospitalized liver failure patients, determine the rate of VTE and bleeding events in hospitalized liver failure patients and retrospectively assess whether the International Medical Prevention Registry on Venous Thromboembolism (IMPROVE) Score is an appropriate tool for determining VTE risk in this patient population.

Methods: This retrospective cohort study is approved by the Institutional Review Board. Patients will be included if they are admitted to our institution between January 1, 2014 and July 31, 2016 with a primary or secondary diagnosis of liver failure based on International Classification of Diseases (ICD) 9 and 10 codes. Additional inclusion criteria include being at least 18 years of age and admitted to the medicine service during hospitalization. Patients were excluded if they were no longer followed by the medical service at any time during their admission, had an observational or outpatient admission, were pregnant, or were admitted for a pre-existing VTE. Demographic data, inpatient laboratory data, and length of stay will be collected through the electronic medical record system. Contraindications to prophylaxis, type of prophylaxis received, and other medical conditions that increase the risk of experiencing a thromboembolic event will be analyzed. Bleeding and clotting events will be assessed using discharge ICD 9 and 10 codes. Based on the information collected, the researcher will determine each patient's IMPROVE score and assess whether appropriate prophylaxis was given. The prevalence of appropriate VTE prophylaxis will be calculated as a percentage of those who get appropriate therapy divided by the total sample size. A 95 percent confidence interval (CI) will be generated.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-033

Poster Title: Prospective identification and follow-up of the low-risk pulmonary embolism population at a tertiary teaching hospital

Primary Author: Candice Sherwood, Hartford Hospital, CT; **Email:** candice.sherwood@hhchealth.org

Additional Author (s):
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Purpose: Traditionally, initial management of pulmonary embolism (PE) has occurred in the inpatient setting, regardless of the patient's presentation and/or risk for adverse clinical outcomes. However, recent guidelines suggest that PE patients identified as low-risk for adverse clinical outcomes may be candidates for management in an outpatient setting. The purpose of this study is to identify and quantify patients with acute PE admitted to Hartford Hospital through the emergency department that would be low-risk for adverse clinical outcomes based on a proposed venous thromboembolism treatment guideline, and to assess whether these patients experience any harms within 30 days of initial presentation.

Methods: This prospective study will be submitted to the Institutional Review Board for approval. A pre-built report that contains patients who underwent computed tomography angiography for suspected PE in the emergency department will be run daily to identify the patients that will be included in this study. Electronic charts will then be reviewed to collect patient demographics, simplified Pulmonary Embolism Severity Index (sPESI) score, Hestia score, and length of stay. If the chart review is insufficient to categorize the patient as high-risk for adverse clinical outcomes, the principal investigator will contact the admitting physician to gather additional information from the time of admission. Informed consent will be obtained from all patients identified as low-risk according to the guideline so that data can be collected to assess the composite endpoint (recurrent venous thromboembolism, rehospitalization, or death within 30 days of initial presentation) via telephone follow-up on day 30 plus or minus 3 days after admission to the hospital.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-034

Poster Title: Barriers and adherence to implementing extended three-hour infusion rates of intravenous beta-lactam antibiotics with activity against Pseudomonas aeruginosa

Primary Author: Rachel Comito, Hartford Hospital, CT; **Email:** rachel.comito@hhchealth.org

Additional Author (s):
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Purpose: The Infectious Diseases Society of America has published guidelines promoting antimicrobial stewardship programs and methods to optimize the use of antibiotics. Hartford Healthcare is a five hospital healthcare system introducing three-hour infusions of beta-lactam antibiotics with activity against Pseudomonas aeruginosa. Previous clinical trials have revealed greater cure rates, mortality benefits, and shorter length of stay by optimizing the pharmacodynamics of beta-lactam antibiotics. This study will determine adherence rates as well as barriers to implementing the three-hour protocol at a large hospital compared to a smaller community hospital.

Methods: This study has been approved by Hartford Healthcare's Institutional Review Board. A retrospective chart review will be conducted utilizing the EPIC computer systems at Hartford Hospital (HH) and MidState Medical Center (MMC) from October 1, 2016, until data on 250 patients has been collected. Adult patients admitted to all medical units at MMC and three similar medical floors at HH will be included if they received a beta-lactam antibiotic with activity against Pseudomonas aeruginosa. Data to be collected includes patient demographics, administration information, and the antibiotic infusion rate. Variables potentially affecting the chosen infusion time such as peripherally inserted central catheter lines, intensive care unit stay, and the availability of other hospital resources will also be studied. The sample size will consist of records taken as a retrospective convenience sample of 250 patients in a 1:1 ratio between institutions. A comparison among two samples of 125 patients would afford 90 percent power to determine if the rate of implementing the three-hour infusion is similar (within 5 percent) to the conventional infusion time. Baseline demographics and nursing data will be reported using descriptive statistics. Inferential statistics will be used to make between-group comparisons.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-035

Poster Title: Assessing Immediate and Long-term Safety of Recombinant Tissue Type Plasminogen Activator for Use in Ischemic Stroke in Patients 80 Years and Older: A Retrospective Revie

Primary Author: Andrew Gentry, John Dempsey Hospital at University of Connecticut Health Center, CT; **Email:** agentry@uchc.edu

Additional Author (s):
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Sanjay Mittal
Allison Dias
Jennifer Sposito

Purpose: Since its inception in 2013 and certification in 2014, the UConn Stroke Program has had many patients that fall into the demographic of 80 years and older. The purpose of this retrospective study is to analyze rTPA use in this patient population and assess immediate, short-term and long-term outcomes in patients that received this medication. The data obtained from this study will serve to clarify the safety of rTPA use in the elderly at various follow-ups not commonly addressed in the literature and guide the therapeutic use of rTPA at UConn John Dempsey Hospital as part of the stroke program.

Methods: This study is a retrospective cohort analysis. It will analyze patients that were admitted to John Dempsey Hospital for acute ischemic stroke. Patients that are 80 years or older will be stratified into two cohorts based upon whether or not they received recombinant tissue type plasminogen activator. Their medical information, including diagnosis, comorbidities and functionality score, will then be reviewed and extracted as needed to obtain the data necessary for our study. Data collection will be undertaken in a confidential manner. The data collected will not permanently contain any identifiable protected health information (PHI) and no new data will be generated from our study. A preliminary power analysis determined that an alpha of 0.05 and a beta of 0.8 can be achieved with a sample size of approximately 80 patients per cohort. This project has been submitted for IRB approval.

Results: pending

Conclusion: pending

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-036

Poster Title: Evaluation of pharmacy involvement in outpatient based transitions of care: assess uptake quality and outcomes

Primary Author: Adam Whalley, John Demspey Hosptial at UConn Health
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Additional Author (s):
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Kevin Chamberlin
Susan Levine
Danielle Beaudoin

Purpose: Transitions of care is currently a point of emphasis in the inpatient setting, but pharmacy is not currently involved in the outpatient setting at this institution. This project will evaluate the uptake, quality, and outcomes associated with pharmacy involvement in the transitions of care for patients of an academic medical center's primary care practice (General Medicine Associates at UConn Health) with a recent discharge from UConn John Dempsey Hospital. The findings will determine if a pharmacy driven medication review will decrease the number of medication errors experienced by patients following hospital discharge.

Methods: This project received approval from the Investigational Review Board as a Quality Assurance/Quality Improvement project. Patients who have are discharged from UConn John Dempsey Hospital will be contacted by a medical assistant to schedule a transitions of care management (TCM) appointment and the medical assistant will obtain and record an accurate medication list for the patient. A pharmacist will review each patient's discharge instructions, medication list, and current outpatient medication profile to identify medication discrepancies and opportunities for pharmacy intervention. Areas of focus will be errors of omission, discontinued medications, dosing changes, therapeutic duplications, drug interactions, and appropriate dosing based on patient specific factors. Following the review, a summary of pharmacist's recommendations will be created and provided to the appropriate provider for the patient prior to the TCM appointment. Following each patient's TCM visit, the acceptance rate of pharmacist's recommendations will be assessed through review of physician

documentation. The findings of this project will be utilized to determine the overall benefit of pharmacy involvement in an outpatient setting following a patient's recent hospital discharge.

Results: Pending

Conclusion: Pending

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-037

Poster Title: Outcomes of front-loaded diazepam in patients experiencing severe alcohol withdrawal syndrome

Primary Author: Jane Mueller, Saint Francis Hospital and Medical Center, CT; **Email:** jane.mueller@stfranciscare.org

Additional Author (s):
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Purpose: Severe alcohol withdrawal syndrome (AWS) is a life-threatening condition possibly leading to withdrawal seizures, delirium tremens, and increased mortality. Benzodiazepines remain the mainstay of treatment but these agents are not without complications including over-sedation, respiratory depression, and incidence of delirium. At our institution, inpatients at high risk of severe AWS are initiated on a fixed schedule of lorazepam with or without front-loaded diazepam. The decision to front-load is widely variable. The goal of this study is to explore the impact of front-loaded diazepam on overall benzodiazepine use and incidence of adverse effects.

Methods: The study will be submitted to the Institutional Review Board for approval. This retrospective matched cohort study will include patients that met criteria for severe AWS and were admitted between April 2014 and August 2016. Patients will be identified by an admitting diagnosis of alcohol withdrawal, a maximum Clinical Institute Withdrawal Assessment for Alcohol (CIWA) score of 20 or greater, and a history of delirium tremens or alcohol withdrawal seizures. Patients will be matched according to baseline characteristics and AWS risk factors. The primary outcome is total benzodiazepine use among patients with severe AWS who received front-loaded diazepam versus those who did not. Secondary outcomes include change in daily CIWA scores, incidence of over-sedation, reloading of diazepam, duration on benzodiazepines, incidence of antipsychotic administration, incidence of delirium tremens, incidence of withdrawal seizure, incidence of intubation, mean length of hospital stay, and transfer to a higher level of care among patients with severe AWS who received front-loaded diazepam versus those who did not.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-038

Poster Title: Barriers to effective medication reconciliation: Identifying discrepancies in medication documentation at discharge

Primary Author: Christine Kubus, Saint Francis Hospital and Medical Center, CT; **Email:** christine.kubus@stfranciscare.org

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Purpose: Medication reconciliation has proven to be a challenge in a variety of care settings, including hospital discharge. Two types of mismanagement are thought to contribute to discrepancies in patients' discharge medications: provider discrepancies and patient discrepancies. One reason provider discrepancies may occur is because of the multiple places for medication documentation at discharge. Studies have shown upwards of 50%-70% of discharged patients have at least one discrepancy in their medication documentation. The objective of this study is to determine where the provider discrepancies lie within discharge documentation at a 600-bed teaching hospital in an urban setting.

Methods: The first phase of this study is to identify provider discrepancies in the documentation of patients' discharge medications. This will be conducted using a retrospective chart review. For inclusion, patients must have a post discharge follow-up visit in the outpatient clinic between December 15th 2015 and January 15th 2016. Patients' charts will be reviewed for discrepancies in the following four documents: discharge plan, discharge summary medication list, after visit summary and profile medication list. Discrepancy will be defined as variations in patients' medication list (either additions or omissions of medications), prescribed dose, direction, duration or route. The primary outcome is the number of patients with one or more discrepancy in any of the four documents. Secondary outcomes will include a subgroup analysis identifying which documents were most likely to have a discrepancy from the others.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-039

Poster Title: Evaluation of antibiotic utilization in patients with urinary tract infection

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Dora

Purpose: Antibiotic optimization is essential to effectively treating patients, avoiding harmful side effects, and limiting the development of drug resistant pathogens. Yet around 50% of all antibiotic prescriptions are inappropriate, as noted in a 2013 report on antibiotic resistance published by the Centers of Disease Control and Prevention. The purpose of this study is to evaluate antibiotic prescribing practices in patients with urinary tract infection (UTI) for appropriateness and to identify opportunities for improvement.

Methods: This project will be submitted to the Institutional Review Board for approval. UTI antibiotic prescribing patterns will be assessed by performing a retrospective review of the electronic medical record. Admitted patients diagnosed with UTI will be identified using International Classification of Diseases, 10th Revision (ICD-10) codes. The following data will be collected for each patient: age, gender, allergies, concurrent infections, relevant comorbidities, pregnancy status, history of urinary tract infections, presence of urinary catheter, organisms isolated, susceptibilities obtained, antibiotics prescribed for current UTI (drugs, doses, routes, length of therapies), recent prior antibiotics used, hospital length of stay, and readmission data. UTIs will be classified as uncomplicated, complicated, or catheter associated, and antibiotic therapies will be assessed for appropriateness according to these classifications and current clinical practice guidelines. Baseline characteristics and antibiotic utilization will be summarized using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-040

Poster Title: Implementation of a COPD transition of care pharmacist

Primary Author: Andrea Bastiaanse, Saint Francis Hospital and Medical Center, CT; **Email:** andrea.bastiaanse@gmail.com

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Purpose: In hospitalized patients, transitions of care (TOC) pose a safety risk associated with adverse events, higher readmission rates and cost. The Affordable Care Act established the Hospital Readmissions Reduction Program which requires Centers for Medicare and Medicaid Services to reduce payments to hospitals with excess readmissions for certain diseases, including chronic obstructive pulmonary disease (COPD). Previous studies found pharmacist-care in COPD was associated with improvements in health-related quality of life, medication compliance, and patient satisfaction. Furthermore, pharmacist-care was associated with reduced hospital admissions and overall costs. The purpose of this project is to implement a COPD transition of care pharmacist.

Methods: The COPD transition of care pharmacist is being implemented in a 617-bed teaching hospital. The service is part of a larger, hospital-wide initiative to improve the care of COPD patients. The pharmacist meets with patients before discharge to review their medication list, provide inhaler education and review an action plan. Education is provided with the use of printed inhaler and action plan education sheets, inhaler technique demonstration, and teach-back reinforcement. Following hospital discharge, the pharmacist provides post-discharge phone follow-up. The follow-up phone call includes an evaluation of medication understanding, reinforcing appropriate inhaler use, review of action plan, and a reminder of any upcoming appointments. Finally, patients scheduled with an appointment in the “Comprehensive COPD Center” receive face-to-face follow-up with the pharmacist as part of their pulmonary appointment. At this visit, the pharmacist ensures appropriate inhaler technique, evaluates and reinforces medication understanding, and discusses the action plan. The service will be evaluated in the future to determine if there is an impact on healthcare utilization.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-041

Poster Title: Medication use evaluation of cefepime at Saint Vincent's Medical Center

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Additional Author (s):
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Purpose: One objective of this study is to examine the indications for which cefepime is utilized at Saint Vincent's Medical Center. For the most common indication(s), further investigation will be conducted to determine the appropriateness of cefepime. This information will be utilized to make decisions about where to target limited resources to make interventions that may optimize the use of this broad-spectrum anti-infective at SVMC.

Methods: This study was granted exemption by the Institutional Review Board. The first 60 patients who received treatment with Cefepime over a three month period between January and March 2016 will be reviewed and the following information will be compiled and analyzed: prescribed indication, microbiological cultures and results, microbiological screening, risk factors for resistant pathogens requiring treatment with 4th generation cephalosporins, and number of days on treatment. Descriptive statistics will be used to determine frequencies of indications for cefepime use, patient risk factors for Pseudomonas aeruginosa, potential to de-escalate treatment, whether or not de-escalation was done, and overall appropriateness of antibiotic selection. Recommendations on opportunities for improvements in prescribing practices will be made to direct future antibiotic stewardship efforts.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-042

Poster Title: Implementation of GeneXpert MRSA/SA blood culture assay and its effect on vancomycin therapy in a community teaching hospital

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Additional Author (s):
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Purpose: Studies have shown that de-escalation from vancomycin to beta-lactam therapy in methicillin-susceptible Staphylococcal aureus (MSSA) bacteremia, results in improved clinical outcomes. Longer duration of vancomycin therapy is also associated with nephrotoxicity and increased prevalence of vancomycin resistant enterococci. Our hospital recently implemented a new polymerase chain reaction (PCR) assay that detects methicillin-resistant Staphylococcal aureus (MRSA) or MSSA bacteremia quicker than traditional testing. The objective of this study is to determine if the PCR assay is leading to quicker de-escalation of vancomycin in patients with MSSA bacteremia.

Methods: The study was approved by the Institutional Review Board. This retrospective study will compare the duration and de-escalation of vancomycin therapy in patients with MSSA bacteremia before and after the implementation of the new PCR assay. Days of vancomycin therapy, time to de-escalation, length of stay, and mortality will be collected from the medical record. The study will have two groups. The control group will be the first 51 patients going backward from the date of implementation of the PCR assay. Group two will be the first 51 patients going forward after implementation of the assay. Patients will be included if they have at least one positive blood culture for Staphylococcal aureus and received at least one dose of vancomycin. Patients will be excluded if they have a mixed culture or if culture is coagulase-negative staphylococcus.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-043

Poster Title: Impact of pharmacist interventions at discharge on hospital readmission rates

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Purpose: With the Affordable Care Act, hospitals have had an increased financial burden when patients are readmitted. Due to some of the consequences of readmissions and decreased reimbursement rates, our institution implemented a pharmacy service called “Meds to Bed” to improve transitions of care during the discharge process. This service allows medications and counseling to be delivered to the patient’s bedside by a pharmacist prior to the patient’s discharge. This retrospective pilot study will compare the 30-day readmission rates of patients who received Meds to Bed services with pharmacist involvement versus those who did not receive the services.

Methods: The Institutional Review Board approved this pilot study. The pharmacy resident will conduct a retrospective chart review for patients who were discharged from the inpatient unit during March 1, 2016 to September 1, 2016. Using a medium effect size, it was determined that 51 participants per group would yield 80 percent power to detect a difference of 0.5 percent between groups for statistical significance. We will evaluate at least 51 participants from a random sampling of discharged patients who did not receive Meds to Bed services and at least 51 participants who received Meds to Bed services with pharmacist involvement. The primary outcome measures to be studied are unplanned readmissions within a 30-day time frame post-discharge. Secondary outcome measures to be studied include emergency department (ED) visits following patient discharge. A student t-test will be used to determine statistical difference between the two groups. All data with patient-sensitive information will be de-identified using study numbers and will not appear during presentation and publication of this study. All information will be stored in a password-protected computer and locked in a passcode-protected safe.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-044

Poster Title: Impact of transgender medicine and cultural competency training on pharmacist perceptions of care

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Purpose: About 1.4 million people in the United States identify as transgender. While the topic of transgender issues has garnered much attention from the media, transgender and gender non-conforming people continue to face discrimination when accessing health care. The purpose of this study is to see if a pharmacist-directed transgender medicine and cultural competency training program can help increase pharmacists' knowledge, confidence, and comfort in treating transgender patients.

Methods: This study will be submitted to the Institutional Review Board for approval. The study population will be pharmacists and pharmacy residents practicing at an ASHP-accredited residency practice site. Points of contact at each practice site will be identified using the ASHP Online Residency Directory. Participants will be sent two surveys and an educational handout, which serves as the transgender medicine and cultural competency training program. One survey will be completed before reading the educational handout and one survey will be completed after reading the educational handout. The surveys will be used to assess pharmacists' comfort, confidence, and knowledge level when caring for transgender patients; surveys will also assess whether subjects found value in this training and any feedback they may have for improvement. All survey data will be submitted anonymously. Survey responses will be reviewed by investigators to compare pre-training and post-training responses to questions.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-045

Poster Title: Correctional prescribers opinions towards use of sliding scale insulin versus basal bolus therapy

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Purpose: The use of sliding scale insulin is discouraged in current practice. The use of sliding scale insulin is not effective at producing consistent glycemic control. However, adequate glycemic control can be obtained through the use of basal bolus therapy. The objective of this study is to evaluate the opinions of physicians on sliding scale insulin to determine a possible transition to basal bolus therapy practice.

Methods: This study will be submitted to the Institutional Review Board for approval. The study population will include all Correctional Managed Health Care prescribers in the Connecticut correctional setting will be recruited via email to participate in an online survey. The online survey will take approximately 30 minutes to complete. The survey will consist of multiple choice and open ended questions to assess prescriber's opinions on the use of sliding scale insulin in the correctional setting. All data submitted will be anonymous. The responses will be reviewed by the investigators to assess the overall opinion of prescribers on the use of sliding scale insulin.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-046

Poster Title: Admission errors with medications that have multiple dosage forms

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Purpose: Medication histories obtained upon hospital admission are major sources of medication errors in hospitals. Many times these errors lead to adverse drug reactions, side effects, and interruptions of therapy. In addition, the unique delivery system of medications provides potential for error. Many health care providers are unaware of the differences in the release patterns of different dosage forms and the effects on therapeutic outcomes and side effects. The objective of this study is to retrospectively determine the rate of medication reconciliation errors requiring pharmacist interventions, specifically involving quetiapine, bupropion, metoprolol, diltiazem, and oxycodone.

Methods: This is a retrospective Institutional Review Board exempt analysis of patients that were admitted to Waterbury Hospital from 2014 to 2016. Patients included in this study had medical reconciliation done upon admission and have been on quetiapine, bupropion, metoprolol, diltiazem, or oxycodone in various dosage forms. Data will be compiled using the hospital medical record system to identify errors in medical reconciliation and risk factors for medication errors. Demographic data such as age, gender, comorbid conditions, and patient residence will be collected. Each group must have at least 60 patients, which provides 80% power to detect a two-fold difference in possible risk factor incidence. Data analysis and statistical testing will be performed using Microsoft Excel® software. P-values less than .05 will be considered statistically significant.

Results: The results are pending data collection.

Conclusion: The conclusion is pending results.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-047

Poster Title: Evaluating the use of double gram negative coverage in septic patients in the emergency department

Primary Author: Kwame Darko, Waterbury Hospital, CT; **Email:** kdarko@wtbyhosp.org

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Purpose: The optimal approach for empirical antibiotic therapy in patients with severe sepsis and septic shock remain controversial. The objectives of this study are to determine the appropriate administration of dual gram-negative coverage in severe sepsis/septic shock patients after quality improvement measures were implemented in the emergency department.

Methods: This study is an Institutional Review Board exempt observational electronic medical chart review because there will be no active subjects involved and protected health information will be de-identified. Data will be collected retrospectively on patients that visited the emergency department between October 2016 and December 2016 who satisfy the inclusion criteria. Data collected for each study participant will include demographics, date and time of diagnosis in the ED, empiric antibiotic regimen, time to administration of antibiotics, time to de-escalation of empiric antimicrobial therapy, narrowed antibiotic regimen, length of stay and discharge outcome.

Results: Pending data collection.

Conclusion: Pending results.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-048

Poster Title: Medication use evaluation of methylnaltrexone versus alvimopan in the treatment of postoperative constipation

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Purpose: Postoperative constipation can lead to significant complications in the healing process of a patient after surgery. About 15-50 pct of patients suffer from constipation problems early after undergoing a surgical procedure. Methylnaltrexone and alvimopan, peripherally acting opioid antagonists, are used in the treatment of this constipation. Over the years, there's been little to no evidence of the superiority of one of these agents over the other in the treatment of postoperative constipation. We will compare the efficacy and safety of the use of methylnaltrexone or alvimopan in patients suffering from postoperative constipation to determine superiority, if any, for either agent.

Methods: This study will be a retrospective chart review of the post-use outcomes for methylnaltrexone and alvimopan in the treatment of postoperative constipation. We will identify patients who underwent surgery at the hospital between July 2015 and June 2016, and who received either methylnaltrexone or alvimopan for postoperative constipation treatment. Patients' age, sex, race, body mass index, diagnosis, type of procedure, history of opioid use (during and postoperative analgesia), time to return of bowel movement, length of hospital stay and 30-day readmission will be collected. Length of stay will be calculated from day of procedure to discharge. Inclusion criteria will include patients aged greater than or equal to 18 years old, underwent surgical procedure at the hospital, received opioid analgesia and received either methylnaltrexone or alvimopan for the treatment of postoperative constipation. Exclusion criteria will include any patient that does not qualify for any of the inclusion criteria listed above and use of either drug was contraindicated. The primary efficacy end point will be time to constipation resolution after receiving the treatment. Secondary outcomes will include length of hospital stay, length of treatment, constipation recurrence while inpatient and safety outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-049

Poster Title: Improving determination of accessibility and affordability of discharge medications through electronic health record enhancements

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Purpose: The lack of an electronic, systematic process to identify high-cost medications limits the number of patients evaluated for assistance and ultimately results in barriers to affordable medication access, significant work for the healthcare team post-discharge, and medication non-adherence. Determining discharge medication affordability and accessibility is challenging because insurance coverage varies greatly. For select medications initiated during admission at Yale New Haven Hospital (YNHH), a pharmacy technician identifies the copay, need for prior authorization (PA), and eligibility for medication assistance. This project's purpose is to implement an electronic PA identification process prior to discharge and a toolkit to assist with affordability.

Methods: This project will validate the consistency between prior authorization identified for the sample of select discharge medications initiated during admission by the pharmacy technician and an electronic prescribing-based option. In addition to soliciting input on discharge medications that frequently requiring PA, prescribers and their support staff will be surveyed to determine the current PA process for various medical group practices at YNHH. A process map will be developed to capture best practices that will support consideration of alternative medications or initiation, and ideally completion, of PA to improve medication accessibility at discharge. A medication access and affordability toolkit will be developed to readily identify MAP options that the healthcare team can employ to increase affordability of discharge medications. Primary outcomes include number of PAs identified prior to discharge as well as number of patients offered MAP options for discharge medications. The number of

PAs completed prior to discharge or alternate medications initiated will be included in secondary endpoint analyses.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-050

Poster Title: Implementing a 72-hour stop for empiric piperacillin/tazobactam orders to decrease broad spectrum antibiotic use.

Primary Author: Nadya Jammal, Yale New Haven Hospital, CT; **Email:** nadya.jammal@ynhh.org

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Purpose: With the rise of antimicrobial resistance the CDC and Joint Commission have recently created a national initiative to promote antimicrobial stewardship programs (ASP). Historically, ASPs have utilized a multimodal approach to optimize antibiotic therapy through methods that include; dose optimization, intravenous to oral conversions, and antibiotic time outs. This institution has incorporated these concepts into their ASP including an automatic 72-hour stop in the electronic medical system on empiric piperacillin/tazobactam dosing. We retrospectively evaluated the outcomes of the 72-hour stop for empiric piperacillin/tazobactam orders including duration of empiric therapy, percent de-escalated, appropriateness of dosing and cost saving outcomes.

Methods: This was a retrospective cohort study involving electronic medical chart review with no planned intervention. Cases were defined as adult inpatients with empiric orders placed for piperacillin/tazobactam and no documented cultures at the time of ordering from September 2014 to October 2014, prior to the 72-hour stop time initiative, and September 2016 to October 2016, after the electronic medical record order set was implemented. The gap between 2014 and 2016 was done in order to avoid skewing data due to the national shortage of piperacillin/tazobactam in 2015. Patients with documented susceptible infections, current or prior transplants, febrile neutropenia or piperacillin/tazobactam for surgical prophylaxis were excluded. Additionally, patients were only analyzed once, repeat admissions and treatment courses were not included for analysis. Data collection forms were used to abstract baseline demographics, admission date, renal function, piperacillin/tazobactam dosage and frequency, appropriateness of dosing, indication and ultimate antibiotic selection (post 72 hour stop). Demographic and clinical data are to be analyzed using descriptive statistical methods and quantifying duration of therapy and cost saving outcomes.

Results: Not available at this time.

Conclusion: Not available at this time.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-051

Poster Title: Streamlining the medication event reviewing process across a large healthcare system

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Purpose: Medication safety events affect over 5% of hospitalized patients, making them one of the most prevalent types of inpatient errors. Hospital reporting of medication errors helps optimize medication event analysis, which may drive process improvement and reduce incidence of errors. Event tracking aids in creating sustainable quality improvement plans to create better data integrity and prevent medication events from recurring. The purpose of this project is to identify opportunities to streamline and standardize the medication event reviewing process across a three hospital healthcare system, as a means to better understanding where in the medication use process errors take place.

Methods: Pharmacists will evaluate and assess our current process for reviewing medication event reports and create quality improvement plans to address opportunities identified through the reviewing process. The quality improvement plans will be focused primarily on standardizing the evaluator form within the online event reporting system with the goal of creating better data integrity to identify opportunities for process improvement. The analysis will be performed on the medication event reports regarding precursor events from all three hospitals within the healthcare system; precursor events are those deviations from generally accepted performance standards (GAPS) that reach the patient but result in minimal or no detectable harm. The evaluator forms used to review medication event reports will be analyzed, with the goal of creating the most optimal documentation of event follow-up. Various fields analyzed may include error category, which identifies the source of the error in the medication use process, and levels of harm, including precursor event or near-miss event. Error categories may involve prescribing, dispensing, transcribing, monitoring and storage. Upon

analysis of the current process, quality improvement plans will be created to address any concerns regarding the evaluation form used by medication error reviewers. Finally, pharmacists will document the selected method for event follow-up and ensure compliance by measuring the success rate of implementing the modifications in the evaluator form.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Descriptive Report

Session-Board Number: 9-052

Poster Title: Intravenous (IV) drug waste minimization as a cost management initiative

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Purpose: Medication waste is costly to health organizations, with compounded sterile products (CSPs) making up a large portion of that cost. With recent changes in regulations regarding the preparation and storage of intravenous (IV) medications, many hospitals have shifted to preparing these medications in their IV compounding rooms. Current practice at our institution involves compounding many of these medications as patient specific doses or storing them in automated dispensing cabinets (ADC) at room temperature. The aim of this study was to evaluate the extent to which IV CSPs were wasted and find a cost effective alternative for their preparation and storage.

Methods: We used data collection tools from our IV room workflow management system to monitor the amount of waste between the months of June 2016 to August 2016. The study institution is a 1, 541 bed academic medical center with a 24-7 IV admixture services. We collected data regarding high-cost CSPs including the following: bumetanide, daptomycin, desmopressin, insulin regular drips (both stock doses and patient-specific doses), levetiracetam, norepinephrine, sodium bicarbonate, thiamine, vancomycin, and vasopressin. Wasted medications, for the purposes of this study, included CSPs that were compounded, sent as patient specific doses or stocked in the ADC, and returned and scanned back into our IV room workflow management system as doses to be discarded. Average wholesale prices (AWPs) were used to determine a dollar amount for waste over a three-month period, which was further extrapolated to 12-month time frame to estimate annual potential for savings.

Results: Between the months of June 2016 to August 2016 1,947 CSPs from the above list were wasted. The dollar amount in waste totaled $85, 441, resulting in an estimated $316, 408 potential annual savings. The breakdown of waste by medication and cost was as follows: bumetanide 2.60%, daptomycin 2.50%, desmopressin 0.31%, insulin 8.4% (including patient-specific and stock doses), levetiracetam 8.6%, norepinephrine 10.3%, sodium bicarbonate 14.9%, thiamine 4.4%, vancomycin 0.34%, and vasopressin 47.5%. The breakdown of waste by medication and quantity wasted was as follows: bumetanide 7.60%, daptomycin 0.2%, desmopressin 0.30%, insulin 21.3% (including patient-specific and stock doses), levetiracetam 17.3%, norepinephrine 9.7%, sodium bicarbonate 28.2%, thiamine 7.7%, vancomycin 1.8%, and vasopressin 6.1%.

Conclusion: The application of a drug waste minimization model for high-cost IV CSPs may be an effective drug cost containment strategy, which may produce durable benefits. Vasopressin was the top contributor with regards to cost and therefore, should be considered a priority target for cost minimization efforts. Possible solutions to reducing IV CSP waste include compounding doses in real time, utilizing our IV room workflow management system to re-use unused doses, and adjusting current par levels for standard stock doses. Further investigation is required to determine the durability of these methods with regards to reducing IV CSP waste.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-053

Poster Title: Multi-center evaluation of parenteral desmopressin for severe, non-hemophiliac uremic bleeding

Primary Author: Lydia Tran, Yale New Haven Hospital, CT; **Email:** lydia.tran@ynhh.org

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Purpose: Desmopressin is used to rapidly reduce bleeding time and blood loss in critically-ill and perioperative patients at risk for severe, non-hemophiliac, uremic bleeding. The recent shortage and resulting increased cost of parenteral desmopressin has prompted utilization reassessment and inventory optimization. The primary objective is to evaluate appropriate parenteral desmopressin use in non-hemophiliac severe bleeding in the presence of acute or chronic renal failure, or use of antiplatelet agents within 5 days of therapy in hospitalized patients at a multi-center health system. Secondary outcome is to evaluate the appropriate dosing regimen for other indications such as central diabetes insipidus or nocturia.

Methods: The study comprises of a retrospective electronic medical record review of 100 patients in a multi-center health system that has received parenteral desmopressin throughout the year 2015. Appropriate usage is defined as, non-hemophiliac patients with documented acute or chronic renal failure who present with severe bleeding (documented systolic blood pressure less than 90 mmHg, on a parenteral vasopressor, or necessitate infusion of packed red blood cells or other blood products) at the time of administration. Other data points to be evaluated include indication for use, patient weight, dosing regimen, relevant complete blood count values (platelet count, hemoglobin, and hematocrit), total quantity of blood products utilized, and time variance between order entry to medication administration. The evaluation and cost analysis of current data is underway, and if the results show inappropriate use by up to 50 percent, we will optimize our current medication use process of parenteral desmopressin health-system wide.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-054

Poster Title: Optimization of inpatient glycemic control in patients managed on concentrated insulin products

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Additional Author (s):
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Purpose: In 2015, the FDA approved two new concentrated insulin products (NCIP): insulin degludec and insulin glargine recombinant. Data is lacking regarding the comparative safety and efficacy of NCIPs as well as guidance on transitioning patients to common formulary basal insulins such as detemir or glargine. Patients are potentially at risk of medication errors when converted from their home NCIP regimen. The purpose of this project is to evaluate the incidence of glycemic events and medication errors in patients admitted to our institution on an outpatient NCIP vs. insulin glargine.

Methods: A retrospective chart review was performed of all adult patients within the health-system since 2012 with a NCIP (Afrezza, Tresiba, Toujeo, and Humulin R U-500) on their home medication list. This study included patients 18 years of age and older, diagnosed with type 1 or type 2 diabetes, that were admitted to a hospital. Patients were excluded if the NCIP was started after their most recent admission, if the NCIP was stopped prior to admission, or if the patient was admitted with an insulin pump. Efficacy endpoints included proportion of blood glucose levels within goal range of 70 – 179mg/dL, glucose range during admission, and appropriate insulin regimen at 24 hours after admission. Safety endpoints were defined as any blood glucose less than 70mg/dL, greater than 180mg/dL, diabetes-related 30-day readmission rates, and accurate admission and discharge medication reconciliation. Patients were also evaluated for concomitant use of glucose-altering medications that may influence the clinician's ability to manage insulin therapy. Descriptive statistics will be used to describe patient demographics and medication conversion errors. Patients receiving an NCIP will be matched to patients receiving insulin glargine based on total daily basal dose within the same admission

year. Logistic regression will be used to compare the odds of having a safety endpoint between patients receiving NCIPs and the control group, controlling for age, gender, and Charlson comorbidity score.

Results: TBD

Conclusion: TBD

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-055

Poster Title: Decentralizing non-formulary management at a large academic medical center: a pre and post analysis

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Purpose: In 2001, a non-formulary process was developed at a large academic medical center where non-formulary and restricted drug requests are evaluated by drug information pharmacists at the point of order entry. An increasing number of non-formulary requests over the years has led to inefficiencies in evaluation of non-formulary requests. As a result, in Fall 2015, the traditional non-formulary process was decentralized to include evaluation by either unit-based pharmacists or drug information pharmacists. The objective of this analysis is to compare financial expenditures, compliance with drug use guidelines, and documentation rates between the traditional non-formulary pager process and the decentralized process.

Methods: Annualized financial expenditure for top 10 non-antibiotic non-formulary and restricted drugs and annualized financial expenditure for top 10 antibiotic non-formulary and restricted drugs will be calculated and compared between the pre-decentralization model time period, Fall 2014 through Fall 2015, and the post-decentralization model time period, Fall 2015 through Fall 2016. Approval and denial rates of top 10 non-antibiotic non-formulary and restricted drugs and approval and denial rates of top 10 antibiotic non-formulary and restricted drugs will be calculated and compared between the two time periods for compliance with the hospital's pharmacy department drug use guidelines. The number of requests documented by pharmacy staff will be compared between the two time periods.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-056

Poster Title: Inventory management: the impact of National Drug Code (NDC) standardization across a health-system

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Purpose: Health-system formulary standardization is a long-standing corporate objective driven by the positive clinical impact and economic value of formulary management. While the health-system formulary is standardized, formulary procurement decisions require standardization to the granular level of the NDC. Health-system NDC standardization efforts were undertaken to optimize contractual compliance, increase wholesaler service levels, and reduce information technology systems (ITS) maintenance. The secondary objective was to improve inventory cost management through the expansion of the health-system shared inventory model.

Methods: The NDC standardization initiative began with the appointment of a project team consisting of pharmacy leadership, ITS specialists, and pharmaceutical wholesale distributor representatives.
The two overlapping review phases included an eight-week assessment of oral solid medications and a six-week evaluation of non-oral solids. Interviews with pharmacy stakeholders at each institution were conducted to understand workflow processes and proactively identify barriers to NDC standardization. A one-year pharmaceutical purchase history, bulk medication repackaging history, and a list of exclusion items were collected from each delivery network.
Selection of the preferred NDC was based on best contracted sales price per unit, package size, and the associated costs to repackage bulk pharmaceuticals. Furthermore, a review of slow moving inventory, defined as procurement of less than three packages annually, was completed to detect additional medications for inclusion in the existing shared inventory model. The storage site for each shared inventory addition was determined based on the patient population served. Recommendations for standardization and shared inventory were presented

to leadership at each facility for approval. All implementations were completed within one fiscal quarter to maximize contract price-dependent selections.
Post-implementation monitoring was conducted using the following metrics: pharmaceutical expenditures, purchase volume, contract compliance percentage, wholesaler service level, and ITS workload impact. A sustainable process for continued NDC standardization was established to manage formulary additions, pharmaceutical supply shortages, product discontinuations and contractual changes.

Results: Research-in-progress.

Conclusion: Research-in-progress.

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 9-057

Poster Title: Optimizing inventory management through interventions focused on low use medications in automated dispensing machines (ADMs)

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Purpose: An opportunity exists to optimize medication inventory in ADMs. At our large academic medical center we maintain an average daily inventory of approximately 3.5 million dollars in medication. Twenty-five percent of this is stored in ADMs with one quarter of that not being utilized over a 90-day time period. The purpose of this project is to develop a standardized procedure to identify any medication not used in greater than 90 days and return it to our central pharmacy supply. By relocating inventory, we will decrease our purchasing needs and maximize utilization.

Methods: We will target specific medications by analyzing which are stored in ADM and identifying those not vended over a 90-day time period. Medications required for emergent or urgent situations will be excluded. At this time the unit-dose cost of each medication will be factored in and ultimately determine if the medication is suitable for unloading. The qualifying medications will be compiled into a daily automatically generated report and incorporated into current operational workflow to facilitate their return to the central supply. The goal being to reduce medication purchase orders overtime reflecting an increased utilization of medication on hand.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-058

Poster Title: Hyaluronate derivatives drug class review across a health system

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Purpose: Hyaluronate derivatives are medications that are used for multiple indications including as surgical aids in ophthalmic procedures, for osteoarthritis of the knee, and extravasation. Currently, there are multiple formulations of hyaluronate derivatives used within the health system. The purpose of this drug use optimization is to minimize formulary duplications while also reducing costs for the health system.

Methods: Patients admitted to any hospital or visiting any outpatient clinic within the health system from January 1, 2015 to January 1, 2016 who received a hyaluronate derivative will be retrospectively evaluated. Patients will be identified from an electronic health record and assessed based on the indication for use, the formulation used, the dose, and the route of administration. The target sample size for this drug use optimization is 100 patients within the health system including both inpatients and outpatients. A cost analysis will be performed comparing all hyaluronate derivatives while also assessing the frequency of utilization of each formulation and ultimately, its role on the health system formulary. Competitors will also be analyzed in terms of use and cost in order to further narrow the formulary of all members of the health system.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-059

Poster Title: Meds to beds program development to increase medication adherence at a large academic medical center

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Purpose: According to WHO, only about 50% of patients take their medications correctly. This is partly due to the low percentage of patients that pick up their prescriptions immediately following discharge, estimated at 40%. Surgery patients are an important population that require adherence to post-surgical medications. These patients will be discharged on pain medications and antibiotics which are important for the safest recovery possible. This project is designed to determine the impact of expanding the medical center's Meds to Beds program to the surgical patient population to improve patient adherence, and provide data to support a business plan for further expansion.

Methods: The multidisciplinary approach to the Meds to Beds program is currently initiated by the concierge pharmacist who visits surgical patients in the recovery area to discuss the availability of the service. The pharmacy resident, supported by the concierge pharmacist, students, and pharmacy technicians, will work with the medical team to facilitate medication prescribing and discussion regarding patients who would benefit from the program. A retrospective review of hospital data and pharmacy records will be utilized to measure both the profitability and safety outcomes of this outlined program. The primary endpoint measuring the program's success will be the percent of patient's obtaining their medications within 24 hours of discharge compared to patients not using the program. Secondary endpoints will include increase in pharmacy revenue, number of prescriptions captured through the program, and percent capture rate on the surgical floor. The number of prior authorizations resolved by the pharmacy by discharge will also be captured

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-060

Poster Title: Alteplase for pulmonary embolism: Evaluation of drug usage patterns and budget impact within a health system

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Purpose: Pulmonary embolism (PE) is a serious medical event responsible for greater than 500,000 deaths per year. Intravenous alteplase is a treatment option for PE that accounts for significant budget impact within this health system. The primary objective of this study is to evaluate the usage patterns of alteplase for PE and to identify opportunities to decrease drug cost throughout the health system.

Methods: This study is a multi-center, retrospective chart review conducted across all sites within the 2,130 bed health system. Electronic medical records will be queried for all adult inpatient alteplase orders with an indication of PE from 6/2015 to 6/2016. The following data will be collected: patient demographics (age, gender), indication for drug use (lysis of PE associated with unstable hemodynamics in imminent or actual cardiac arrest, lysis of PE in non-cardiac arrest), dose of alteplase ordered, and documented drug administration. Electronic health record documentation will be reviewed to determine reason for drug not administered, if applicable. Total alteplase use and waste will be calculated based on drug ordered and admixed, but not administered. Cost analysis will be performed based on calculated waste of alteplase.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-061

Poster Title: Rituximab for non-oncology indications in the inpatient setting

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Purpose: In addition to the treatment of certain hematologic cancers, rituximab is also used in the treatment of rheumatoid arthritis, immune thrombocytopenia, graft versus host disease, and antibody mediated rejection in solid organ transplantation. Though inpatient administration may be clinically indicated for some patients, often it may be deferred to outpatient administration to improve workflow and cost-effectiveness. The purpose of this retrospective review is to assess the medical necessity of inpatient rituximab administration for non-oncology indications.

Methods: The electronic medical records of 100 patients that received rituximab from 2014–2016 will be evaluated. Patients >18 years of age that received rituximab inpatient for non-oncology indications will be included in this study. Patients receiving rituximab as part of a clinical trial will be excluded from the study. The following data will be collected for this study: patient's demographic information, indication for rituximab, date of rituximab administration and discharge, insurance information, adverse events, and initiation or continuation of therapy. The primary endpoint will be to evaluate the percentage of inappropriate inpatient administrations of rituximab based on pre-specified criteria. Criteria considered appropriate for inpatient administration includes: patients that are medically unstable, located in an intensive care unit, documented prior life-threatening anaphylactic reaction to rituximab who requires inpatient monitoring, patients with life-threatening autoimmune disorders, factor VIII deficiency requiring transfusions to prevent bleeding, antibody-mediated rejection in solid organ transplant recipient deemed unstable for discharge, and chronic graft versus host disease. Indications deemed inappropriate for inpatient administration will include non-approved indications or no literature that supports rituximab as appropriate therapy, or admission to hospital for irrelevant reasons. Secondary outcomes will include the incidence of

documented adverse events, number of days between rituximab administration and hospital discharge, and a cost analysis comparing inpatient and outpatient administration.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-062

Poster Title: Evaluating the usage of intravenous magnesium at a large academic medical center

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Purpose: A recent medication use evaluation of intravenous (IV) magnesium showed high rates of inappropriate usage for magnesium repletion. It was found over a six-month period that 51 percent of IV magnesium usage had no proper indication. Some of the appropriate criteria for the usage of IV magnesium includes new onset arrhythmias, seizure disorders, chronic alcoholism, and others. A new laboratory order set was implemented where magnesium was no longer coupled with calcium and phosphate; instead, providers would have to individually order magnesium levels. We seek to determine the impact this change will have in the prescribing patterns of IV magnesium.

Methods: We will collect data on the ordering of IV magnesium sixty days after the implementation of the new laboratory ordering system. The data that will be collected are the following: total serum magnesium levels ordered, total number of orders for IV magnesium, total oral magnesium supplementations ordered, and total dollars saved from implementation of the new lab ordering service. A cost analysis will be made based on a comparison of before and after implementation of the new lab ordering system. In addition, a sub group analysis will be performed looking at specific units in the hospital to assess the usage of IV magnesium on specific floors.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-063

Poster Title: Expanding the pharmacy practice advancement initiative (PAI) through student engagement in direct patient care activities

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Purpose: The Practice Advancement Initiative is a national program led by the American Society of Health-System Pharmacists whose goal is to positively impact the health and well being of patients by supporting innovative practice that supports the effective use of pharmacists as direct patient care providers. Engaging student pharmacists in direct patient care activities such as medication reconciliation and therapeutic drug monitoring may prevent or mitigate medication errors, and optimize pharmacists' time expenditure. The purpose of this study is to assess and quantify the impact of student pharmacists by the amount of clinical interventions made and pharmacist time saved.

Methods: This is a multi-center observational study. All student pharmacists completing an advanced pharmacy practice experience rotation at our health system will document their interventions, projects, patient interactions, and the student time spent per activity. The pharmacist time saved per intervention type will also be documented. Student's rotation syllabi will be standardized in which students will be responsible for a specific number of clinical interventions per week. Some of these clinical interventions include medication reconciliation, intravenous to oral conversion, patient interaction, renal dose adjustment, addition of a new drug, and therapeutic drug monitoring. Each student will have a weekly goal based on rotation structure. Both preceptors and students will be educated on the new standardized syllabus. In addition, students will be trained on proper intervention documentation and will receive weekly feedback regarding the quantity and quality of their interventions. Data including the total number of interventions made, student time spent per intervention, and pharmacist time saved will be collected from August 2015 to October 2016. The primary endpoint is the average

pharmacist time saved by students completing direct patient care activities. The secondary endpoint is the number of clinical interventions completed per student week and the amount of pharmacist time saved compared to the amount of student time spent per intervention. Descriptive statistics will be used to compare the pre and post syllabus standardization.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-064

Poster Title: Leveraging medication history technicians in the pre-operative setting

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Purpose: Approval of a medication reconciliation business plan at a large academic medical center has expanded pharmacy resources to include an additional ten full-time equivalent (FTE) medication history technician (MHT) positions. The aim of this project is to develop, implement and evaluate a medication reconciliation process in which MHTs obtain pre-admission medication histories for 100 percent of pre-operative surgery admission patients. The primary endpoint is the number of unintentional history and reconciliation errors identified in admission orders with potential for patient harm.

Methods: From October 2016 to June 2017, MHTs will gradually be assigned the responsibility of performing all medication histories for pre-operative surgery admission patients. Pre-operative surgery admission patients will be included regardless of age, gender, race or ethnicity. Medication histories will be taken by trained MHTs via telephone, immediately following an initial pre-operative nursing phone call. MHTs will use a standardized interview technique adopted from the Multi-Center Medication Reconciliation Quality Improvement Study (MARQUIS) to obtain the best possible medication history, ensuring that all home medications are verified with two independent, agreeable sources. Discrepancies will be documented in the patient's electronic health record (EHR) in a standardized format. A pharmacist will then review and make pertinent updates to the home medication list based on the MHTs notations. The updated list will be accessible to all members of the healthcare team throughout the patient's admission. As part of MARQUIS and in order to assess quality of medication histories, a study pharmacist will audit medication histories obtained by nurses and MHTs and collect data in a de-identified online database. Representatives from the preadmission testing area and pharmacy services will collaborate during monthly meetings to

streamline implementation, monitor progress, and evaluate feedback from nurses, providers, and MHTs. The information and data gathered will serve to identify best practices, barriers, and lessons learned from the implementation of this medication reconciliation process.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-065

Poster Title: Sugammadex: a health system-wide evaluation of efficacy, safety and economic impact

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Purpose: Neuromuscular blocking agents, such as rocuronim, vecuronium and succinylcholine, are widely used in surgical practice to facilitate intubation and ensure optimal skeletal muscle relaxation. Until recently neuromuscular blockade (NMB) reversal was accomplished through the use of the acetylcholinesterase inhibitor, neostigmine. Sugammadex, a modified gamma cyclodextrin, has shown to effectively reverse moderate to profound rocuronium or vecuronium- induced NMB and reduce the time to neuromuscular function recovery. The purpose of this project is to evaluate safety, efficacy and potential cost savings following the formulary addition of sugammadex at our health system.

Methods: A retrospective review of the intra-operative records will be conducted to identify patients who underwent a surgery requiring reversal of neuromuscular blockade with sugammadex or neostigmine. Efficacy of NMB reversal will be assessed by evaluating appropriateness of the dose administered compared to patient's weight, NMB level (defined as moderate block, profound block or rapid sequence intubation block) and time between surgical closure and extubation. Safety of sugammadex will be assessed based on the need for re-intubation in the post-anesthesia care unit (PACU) and incidence of adverse drug effects, such as post-operative nausea and vomiting, compared to neostigmine use. A cost evaluation will be conducted based on the sugammadex vial volume used in relationship to the dose required and a change in utilization of rocuronium compared to succinylcholine since sugammadex formulary approval.

Results: Not available at this time

Conclusion: Not available at this time

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-066

Poster Title: Hypophosphatemia management optimization in a large health-system

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Purpose: Hypophosphatemia, defined as serum phosphate less than 2 milligrams per deciliter, can result in severe clinical sequelae including respiratory failure, seizures, and mortality. With increasing costs for intravenous sodium and potassium phosphate, a guideline on appropriate usage was implemented in our computerized provider order entry system (CPOE) at the health-system in 2014. The primary outcome is to determine adherence rate to our guideline, and across the health-system if it were to be applied.

Methods: Electronic medical records of 150 patients that received intravenous sodium and potassium phosphate from July 1, 2015 to December 31, 2015 are being reviewed. Exclusion criteria include those who have creatinine clearance less than 30 milliliters per minute, documented acute kidney injury, chronic kidney disease, on a dialysis modality, or on parenteral nutrition. Our guideline defines that intravenous phosphate is warranted if serum phosphorus is less than 2 milligrams per deciliter, and the patient cannot tolerate oral supplementation. Decision to use sodium phosphate versus potassium phosphate depends on serum potassium level. Intravenous sodium phosphate is the preferred choice of repletion, but if serum potassium is less than 4 milligrams per deciliter then intravenous potassium phosphate is recommended. The guideline states for both intravenous forms of phosphate 15 millimoles is recommended, unless the patient's weight is 70 kilograms or more, in which case 21 millimoles is the preferred dose. Percentage of non-adherence is defined as any deviation from the guideline, which includes when oral supplementation is the preferred method of repletion. Other examples of non-adherence are wrong product, wrong dose, or wrong frequency order. Evaluation of the current data is underway, and if the data shows a reduction of inappropriate use by 50%, then an optimized guideline on phosphate repletion will be implemented across the health-system to improve patient care while reducing overall hospital costs.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-067

Poster Title: Cardiac stress testing agent selection: a retrospective assessment of adherence to drug use guidelines

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Purpose: Recently, the American Society of Nuclear Cardiology updated its guideline detailing pharmacologic stress agents utilized in cardiac stress testing; however, there remains no standardization for agent selection. In 2013, one of three hospitals in a large health system implemented a guideline for pharmacologic stress testing agent selection, categorizing patients into risk strata for potential adverse events. This strategy for cost-effective agent selection between adenosine, regadenoson, and dobutamine was not adopted at the additional institutions. The purpose of this review is to retrospectively assess compliance to this guideline at the initial institution and standardize agent selection across the entire health system.

Methods: Patients undergoing cardiac stress testing will be reviewed from the period of March 1, 2016 to June 30, 2016. Information collected will include chosen stress agent, weight, BMI, COPD diagnosis, asthma diagnosis or inclusion of bronchodilator or steroid inhalers to treat these diseases in active medication list, systolic and diastolic blood pressure at time of testing, and an allergy or intolerance history to any of the pharmacologic agents. This data will be used to determine the appropriate stress agent that should have been chosen based on the current drug use guideline. The primary endpoint is to assess guideline compliance for agent selection at the initial institution. A secondary endpoint will be to assess agent selection at other institutions within the health system against these guidelines. These results will be utilized to estimate cost-savings across the health-system. A safety analysis will be completed to review adverse events secondary to use of these agents. Additionally, a subgroup safety analysis will be completed specifically looking at percentage of adverse events in the adenosine group

stratified by weight/BMI, as the dosing of this agent is currently based on total body weight. All primary and secondary study outcomes will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-068

Poster Title: Expanding the practice advancement initiative (PAI) through implementation of optimized pharmacy resident practice

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Purpose: The Practice Advancement Initiative (PAI) aims to advance the health and well-being of patients by optimizing the role of pharmacists in providing direct patient care. Our institution has expanded the pharmacy residency program with the goal of decreasing the pharmacist to patient ratio. This allows for better patient care. The purpose of this study is to increase the level of clinical pharmacy services consistently provided by pharmacists to enhance the patient care experience and improve patient safety, using interventions as a surrogate marker.

Methods: This is a single-center, retrospective study using descriptive statistics. Data will be collected to determine the total amount of interventions documented in the electronic health record by PGY-1 and PGY-2 pharmacy residents and clinical pharmacists. Baseline data will be from July 2015 to July 2016, at which point we expanded the residency class. With this increase in residents, the hospital also optimized twenty consistent resident run service rotations, and focused on setting and standardizing expectations for resident accountability. Resident preferences were maintained through strategic scheduling. Data from August 2016 to October 2016 are expected to reflect these changes. Interventions made by pharmacy interns, students, pharmacy technicians, and foreign pharmacists will be excluded from this study. Examples of high priority interventions that will be tracked include intravenous to oral conversion, patient counseling, medication reconciliation, renal dose adjustments, and drug level monitoring. The primary endpoint for this study is the number of high priority interventions documented by pharmacists before and after our practice changes. Secondary endpoints include resident-specific interventions, the number of medication errors and adverse events reported by pharmacists, the pharmacist to patient ratio, number of medical teams with a

dedicated/rounding pharmacist, and hourly order verification volume per pharmacist. Data and insights from this retrospective study period will be utilized to drive continuous quality improvement to optimize the resident practice.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-069

Poster Title: Implementation of a health system-wide IV sodium bicarbonate infusion utilization guideline

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Purpose: Sodium bicarbonate is an alkalinizing agent used for a wide array of indications, including treatment of acid-base disorders, severe diabetic ketoacidosis, and toxicological overdoses. Inappropriate utilization of IV sodium bicarbonate infusions may lead to suboptimal therapeutic outcomes and excessive expenditure, all of which may be exacerbated during a national drug shortage. The purpose of this drug use optimization project is to streamline IV sodium bicarbonate infusion utilization to improve cost-effective measures through the development and implementation of a health system-wide guideline.

Methods: A multi-center retrospective chart review will be conducted on all patients ordered for IV sodium bicarbonate infusion during hospital admission. Data will be collected over a period of six months between August 2015 to January 2016. Data collection will include indication, concentration, duration of therapy, and laboratory values including arterial pH and serum bicarbonate level. Exclusion criteria will include pediatric patients in addition to patients receiving IV sodium bicarbonate infusion for contrast-induced nephropathy, high-dose methotrexate therapy, or hyper-CVAD treatment. A total sample size of 150 patients will be selected via randomization. A pharmacist will then review, analyze, and assess all IV sodium bicarbonate infusions for appropriateness of therapy based on one of the center's criteria for usage. An updated, health-system wide, evidence-based guideline will then be implemented to assist in the ordering and administration of IV sodium bicarbonate infusion when indicated.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-070

Poster Title: Standardizing the medication procurement process in the ambulatory clinic setting

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Purpose: Ambulatory clinic sites associated with our large academic medical center have two methods for ordering and replenishing medications: directly from our contracted wholesaler or from the pharmacy department. Our lack of a standardized process for clinics in ordering medications is inefficient and can result in duplication of orders filled and unnecessary work. The purpose of this project is to standardize the ordering process for ambulatory clinics and utilize our current technologies and resources to minimize or eliminate the manual ordering of medications.

Methods: A complete list of roughly two hundred ambulatory clinics serviced by the pharmacy department will be obtained. An assessment will be conducted to determine the current method of medication ordering and storage at each clinic. For clinics with an automated dispensing cabinet (ADC), an assessment of current medications stored in the cabinet will be conducted to ensure appropriateness based on the patient populations serviced at the clinic. Additionally, an assessment will be conducted to confirm all medications stored in the clinic are in the ADC and not in other unsecured locations. Clinics without an ADC will be granted access to inventory management software. This software will split individual orders to route to our contracted wholesaler or manual pick from our central pharmacy carousel based on the amount of medication being requested. These process changes will allow for clinic ownership of inventory management, while simplifying individual ordering methods. Successful implementation will be measured by a reduction in the number of manual orders specifically by telephone, fax and ordering sheet.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-071

Poster Title: Implementation of a Pediatric Satellite Pharmacy Within a Large Health System: A Failure Mode and Effects Analysis

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Purpose: A large academic health system pharmacy department has approved plans to build a technologically advanced, just-in-time dispensing pediatric and women's services satellite pharmacy including use of an IV workflow system and carousel technology. The purpose of this study is to identify best practices for establishing multiple technologies in a pediatric and women's services satellite pharmacy with risk mitigation through application of a failure modes and effects analysis.

Methods: This prospective evaluative study is a continuous quality improvement initiative that will take place over the course of the satellite building time. The current medication distribution process will be assessed and mapped. A failure modes and effects analysis will identify potential risk points within the current processes. A failure detection scale using an adapted version of previously published scales will be applied to determine high risk elements. A risk priority number will be assigned to each process to quantify likelihood of occurrence, detection, and severity of impact. Proactive strategies, involving multidisciplinary healthcare professionals, will be generated to ensure integration of multiple technologies within the just-in-time dispensing satellite pharmacy for this special population.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 9-072

Poster Title: Evaluate the efficacy of pneumococcal vaccine in immunized population two years before and after immunization regarding hospitalization and ICU admission due to respiratory tract infection

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Purpose: Pneumococcal vaccine is recommended by different national and international institutions for high risk populations as elderly (over 65 years), the young, and those with underlying health problems, such as chronic obstructive pulmonary disease, diabetes mellitus, congestive heart failure, and sickle cell anemia. More than 90% of pneumococcal infections can be prevented by a single pneumococcal vaccine, which protects against 23 different types of streptococcus pneumonia bacteria.
The purpose of this study was to evaluate the real effects of pneumococcal vaccine in regards to the number of medical ward and intensive care unit (ICU) admissions due to pneumonia post vaccination.

Methods: The institutional review board approved this retrospective study. Men and women 18 years and above who were eligible for vaccination and actually received the pneumococcal vaccine between June 2012 and June 2013 were reviewed for any respiratory tract infections that caused admission to a medical ward or ICU two years before and two years after vaccination. Patients under 18 years old and congestive heart failure patients were excluded. Data for 161 patients were collected retrospectively by reviewing patients' charts for demographics, comorbidities (smoking, chronic kidney diseases (CKD), diabetes (DM), asthma, chronic obstructive pulmonary disease (COPD), and hypertension (HTN)), microbiological

laboratory data, X-rays, respiratory panel, and empirical antibiotics treatment (especially Azithromycin and respiratory fluoroquinolones).
The primary goal was to evaluate the rate of hospitalization to medical wards and ICUs. Secondary aims included the evaluation of the efficacy of pneumococcal vaccine in different age groups and different comorbidities.

Results: The study included 161 patients; those from 64–85 composed the dominant age group at 52%. Diabetic patients composed 57%, HTN 70%, and COPD/asthma 44.7%.
The rate of hospitalization due to respiratory tract infection was significantly reduced within two years after vaccination: 71% to 39% (P less than 0.05). There was a trend towards lower ICU admissions However, the results did not achieve statistical significance (P greater than 0.05).
In diabetic patients there was a decrease in hospitalization and ICU admission (70.7% to 37.0% ,P less than 0.05; and 14.1% to 12% P greater than 0.05, respectively) In HTN patients, the difference between hospitalization and ICU admissions was (71.7% to 39.8% P less than0.05;and 12.4% to 13.3% P greater than 0.05 respectively)while in COPD/asthma there was also a difference in hospitalizations and ICU admissions (75% to 36.1%, P greater than 0.05; and 11.1% to 8.3%, P greater than 0.05, respectively).

Conclusion: Pneumococcal vaccine decreased hospitalizations due to respiratory tract infections. The clinical significance of these findings must be determined in larger long-term clinical trials, especially on ICU admission.

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-073

Poster Title: Medication waste analysis using barcode scanning technology in a large community hospital

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Purpose: Pharmaceutical waste can make a large impact on the cost of care for health systems. Within a large hospital, there are many areas for medication waste due to IV room, compounded medication expirations, and loss of product during inpatient transitions. Medication waste can be difficult to track in a large hospital due to the variety of sources of waste that can be generated. The purpose of this project was to complete an analysis of medication waste at a large community hospital. A technician inpatient transitions of care process to reduce medication waste utilizing an electronic system was also created.

Methods: A pre-intervention analysis of medication waste was conducted. The sources for waste included automated dispensing cabinet expirations and returns, patient-specific doses, and IV room waste. A waste analysis tool was utilized in order to document medications returned to central pharmacy. Reason for waste was also included in order determine the source of the waste. Data was analyzed in order to determine waste reduction strategies. A technician pilot was also conducted in order to determine the impact of an inpatient transitions of care program on waste reduction. Upon patient transfer, technicians moved all patient-specific medications to the new patient unit automated dispensing cabinet. An analysis was conducted on the pilot program in order to determine the impact on direct product cost and labor costs.

Results: Research-in-progress

Conclusion: Research-in-progress

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 9-074

Poster Title: Evaluating hydromorphone use in the emergency department and the pharmacist's influence on prescribing practices

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Purpose: Pain management is a significant concern in patients who present to the emergency department. Optimal pain management takes into consideration patient-specific factors, such as opioid naivety, adverse effect profile, allergies, pain source, and pain scale. Variability in prescribing practices exists for pain management in an acute-care setting. The objective of this study is to evaluate the use of hydromorphone in the emergency department and determine its appropriateness.

Methods: This study is a retrospective data review conducted at a 407 bed teaching hospital located in an urban setting. This project is currently pending Institutional Review Board approval. Data collection will be conducted via review of hydromorphone orders in a randomly sampled 100 patients. After data evaluation has concluded, the findings will be shared with the medical staff. A one-month "washout" period will take place during this education phase. Post education, data will be collected via the same strategy to determine effectiveness of the intervention.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-075

Poster Title: Review of the use of dexmedetomidine in adult patients in the intensive care unit (ICU)

Primary Author: Liane Horiuchi, Baptist Hospital of Miami, FL; **Email:** lianeh@baptisthealth.net

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Purpose: To create a database that describes the current prescribing patterns of dexmedetomidine at Baptist Hospital of Miami. This database will be used to evaluate the use of dexmedetomidine in adult patients in the ICU and to assess prescribing criteria.

Methods: A random sample of 50 adult ICU patients prescribed dexmedetomidine between January 1, 2016 and June 30, 2016 will be evaluated to assess appropriate prescribing criteria compared to the package insert. Adverse events, such as bradycardia, hypotension, arrhythmias, and acute kidney injury that require interventions from dexmedetomidine will also be evaluated. This research will be used to develop a protocol for dexmedetomidine in hopes to standardize its use and decrease the likelihood of potential adverse events.

Results: In progress

Conclusion: In progress

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-076

Poster Title: Retrospective review of complete joint replacement patients stratified by prophylactic anticoagulation received

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Purpose: To reveal prescribing patterns of deep vein thrombosis (DVT) prophylaxis among orthopedic surgeons for patients undergoing total knee replacement or total hip replacement. Patients included in the study will be stratified by therapeutic class of the prophylactic agent received post-surgery. There is no current guideline implemented at Baptist Hospital of Miami for selection of a prophylactic agent but is instead based off the prescriber's clinical judgement on a case-by-case basis. The goal is that through evaluating the bleeding, DVT, and infection complications post-surgery, prescribers can assess the efficacy and safety of each prophylactic agent among specific patient populations.

Methods: Retrospective chart review of 120 patients who underwent either a total hip replacement (THR) or total knee replacement (TKR) during a twelve-month period beginning July 1st 2015 and ending June 30th 2016. Patients will be randomly selected and classified by the type of surgery performed and the therapeutic agent received for DVT prophylaxis. Sixty TKR patients and sixty THR patients will be included in the study. For each type of surgery, patients will be further organized into three groups of twenty patients, classified by type of therapeutic agent received. The three categories for therapeutic agents include aspirin, low molecular weight heparin, or novel oral anticoagulant. Data collection will include patient demographics, risk factors for bleeding and thrombosis, details of surgery, post-operation complications, and all-cause readmission within thirty days of surgery. After data collection is completed, prescriber's will be able to review specific patient populations and compare the outcomes based upon the type of therapeutic agent received.

Results: In progress

Conclusion: In progress

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-077

Poster Title: Evaluating pharmacy technician satisfaction and processes at a tertiary academic medical center

Primary Author: Neill McNatt, Bayfront Health - St. Petersburg, FL; **Email:** neill.mcnatt@bayfronthealth.com

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Purpose: A community hospital currently does not have a standardized pharmacy technician training program for its employees. Pharmacy technician satisfaction historically has been low especially in regards to initial training which has led to low retention rates of new employees. By creating a standardized pharmacy technician training program and having participants complete an engagement and satisfaction survey, the goal is to facilitate an improved pharmacy technician program that will increase engagement, satisfaction, and retention.

Methods: A community hospital is currently in the process of creating a new technician training program led by pharmacy leadership. After the two week initial training, the data will be prepared for analysis following export from a survey completed using SurveyMonkey. Frequency distributions will be tabulated for all relevant questions. Non-parametric tests along with median scores and ranges will be calculated, as appropriate. Correlation analysis via chi-squared test will be completed to determine relationships between 2 or more variables believed to be associated with one another.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-078

Poster Title: Multi-Disciplinary Medication Assistance Program for Indigent Patients Suffering with Heart Failure

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Purpose: To perform a data analysis of a multi-disciplinary medication assistance program currently offered as a new standard of care service at an institutional hospital. Analysis will determine the impact of medication assistance on 30-day hospital readmission rates for indigent patients suffering with heart failure. The program involves the skills of nurses, case management, and pharmacists working together as a team. The results of this standard of care service evaluation will be compared to previous readmission rates for similar indigent patients suffering with heart failure prior to program installation.

Methods: Eligible patients include those that are suffering with heart failure who require furosemide, carvedilol, metoprolol, lisinopril, and/or losartan for long-term medication management. Case management verifies each patient has no financial resources available to afford discharge medications. Once patients are identified with heart failure and financial need they are enrolled into the program. After being consulted by case management, extensive education is provided to each patient by the pharmacist and heart failure coordinator for medication assistance and disease state management. Discharge planning to include physician follow-up and outpatient management scheduling by case management. Upon discharge each patient will receive a 30-day supply of their medications, free of charge, which includes furosemide, carvedilol, metoprolol, lisinopril, and/or losartan dependent upon their personalized drug therapy regimen. Follow-up and tracking by the heart failure coordinator and pharmacist will be performed with each patient via telephone 1-2 weeks after discharge. The study period includes eligible patients from August 1, 2016 to January 31, 2017. The target enrollment into the program during the 6-month pilot period is 50 patients. The results of this

program evaluation will be compared to previous readmission rates for an equal number of similar indigent patients suffering with heart failure prior to program installation from August 1, 2015 to January 31, 2016. The primary outcome of this study will be to compare 30-day hospital readmission rates between groups.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-079

Poster Title: Extended Infusion Piperacillin/tazobactam Impact on Mortality and Length of Stay in Critically Ill, Obese Patients

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Purpose: Current literature on extended infusion piperacillin/tazobactam has evaluated the mortality and length of stay of the severely critically ill with Acute Physiology and Chronic Health Evaluation II scores greater than or equal to 17 (APACHE). The objective of this study is to compare intermittent piperacillin/tazobactam versus extended infusion piperacillin/tazobactam effect on the mortality and length of stay in obese and non-obese critically ill patients.

Methods: The study is submitted to the Institutional Review Board for approval. Data will be collected from patients' electronic medical records at a community hospital. The electronic medical record will identify intensive care unit (ICU) patients who received piperacillin/tazobactam infusion and generate a report. The following data will be collected: patient demographics, APACHE score, body mass index, length of stay, survival, antibiotics administered, loading dose administered, treatment duration, drug allergies, cultured organisms, minimum inhibitory concentration (MIC) values, and hospital costs. Data will be de-identified to protect confidentiality of information and stored in a secured database. An ANCOVA will be utilized to assess if weight confounds the comparison between intermittent and extended infusion piperacillin/tazobactam dosing. Categorical and continuous data will be compared via a Mann-Whitney U test. Data will be reviewed to assess if there is a difference between intermittent and extended infusion piperacillin/tazobactam on targeting MIC's, length of stay, and mortality in the severely critically ill obese patient population.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-080

Poster Title: Incidence of venous thromboembolism in hospitalized high risk patients: a retrospective cohort chart review

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Purpose: Hospital-acquired venous thromboembolisms (VTE) are a concern for healthcare institutions because they can cause substantial morbidity and drastically increase healthcare costs. Despite aggressive prophylactic measures, patients with obesity, malignancy, or ICU admission remain at an increased risk of developing hospital-acquired VTE. This retrospective cohort chart review aims to discover the rate of hospital-acquired VTE development in high-risk patient populations at a 400 bed community hospital in order to develop a protocol for ideal dosing of pharmacologic prophylaxis in these patients.

Methods: After approval from the institution's research committee, an electronic report will be generated to identify patients with an ICD-9 or ICD-10 code for deep vein thrombosis (DVT) or pulmonary embolism (PE) while in the hospital from January 1, 2015 to January 1, 2016. Obesity will be defined as a body mass index (BMI) greater than 30 kg/m2 or an actual body weight greater than 120 kg and 20% above the patient's ideal body weight. Cancer patients will be identified by ICD-9 and ICD-10 codes for primary malignancies. Intensive care unit patients will be identified as having an admission to the medical ICU during the course of hospitalization. Charts will be reviewed for type of VTE prophylaxis, dose of pharmacologic prophylaxis, signs or symptoms of bleeding (defined by Hgb drop of > 1.5 g/dL in 24 hours or documented bleeding), and readmission within 90 days of discharge. Patients who develop a documented VTE within 2 weeks of surgery will be excluded. If patients are readmitted and developed another VTE they will be counted as 2 incidences.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-081

Poster Title: Implementation and utilization of procalcitonin laboratory testing at a teaching community hospital

Primary Author: Jinal Choksi, Boca Raton Regional Hospital, FL; **Email:** jinalchoksi12@gmail.com

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Purpose: Procalcitonin (PCT) is a novel biomarker that has been studied in patients with sepsis and in lower respiratory tract infections (pneumonia, COPD exacerbation and bronchitis). PCT levels are elevated in bacterial infections and therefore can help differentiate between viral and bacterial infections. PCT guidance can aid in antibiotic stewardship by reducing antibiotic duration and promoting deescalating or discontinuing antibiotics. The objective of this study is to evaluate the utilization of PCT test that will now be available to order at our institution and assess any antibiotic changes and cost savings as a result of these levels.

Methods: The study population will include all the patients that have PCT level ordered over a two month period. A report will be generated on a daily basis for any patient that has an order for a PCT level. The following information will be collected for each patient: patient's age, gender, location, physician ordering the lab, initial indication of antibiotics, starting antibiotics ordered, PCT level, number of PCT test ordered, days of antibiotic therapy and length of stay. The patient identifiers will be de-identified and all the data collected will be kept confidential. The physician will be instructed to follow the algorithm created for utilization of PCT levels although clinical judgement will be allowed. The impact of using PCT testing on overall management of the patient will be assessed and potential cost savings will be evaluated.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-082

Poster Title: Utilization of visual stimulation tools and nursing to improve the effectiveness of patient education on hospital consumer assessment of healthcare providers and systems (HCAHPS) scores

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Purpose: Patient education is paramount in order to obtain positive patient outcomes. Many efforts have been trailed and initiated in the hospital setting in order to find the most effective way to successfully deliver medication education. Examples of this include patient counseling and medication education booklets. However, there is limited information regarding the impact that these interventions may have on the Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey. In this pilot pre-post interventional study, we will evaluate the impact that multiple visual tools provided simultaneously with patient counseling have on medication education, and HCAHPS scores.

Methods: This is a prospective, pre-post interventional pilot study that will be conducted between October 2016 to March 2017 at Boca Raton Regional Hospital, a not-for-profit, advanced tertiary medical center. The target population will be all patients admitted to the 4th floor within that time frame. The interventions will consist of multiple visual tools that will be combined with medication education in order to increase HCAHPS scores. These tools include medication education booklets, videos, word puzzles and placemats which will reinforce the standard patient education currently delivered by pharmacists, pharmacy students and nurses. Every tool used will be consistent in terms of content (descriptive graphics), colors and medication information. Nurses, pharmacy students or the pharmacist responsible of patient medication education will be in charge of distribution of the materials. The primary outcome is achieving the 80% percentile in the medication education related HCAHPS scores. Secondary outcomes will be related to usefulness of the interventions based on patients' feedback, nurse's workload, average change in HCAHPS scores and the difference in HACHPS scores between the

study group and the control. A questionnaire to assess patients' feedback and nursing shadowing by pharmacy students will be performed to measure compliance by nurses in delivering materials and education. Statistical analysis assessing the differences in HCAHPS scores will be reported using descriptive statistics.

Results: n/a

Conclusion: n/a

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-083

Poster Title: Implementation of a pharmacist-run clinical service at a medical health clinic affiliated with a non-profit organization and its potential impact on readmission rates

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Purpose: Studies have shown that socioeconomic status can have a direct impact on the readmission rates of patients in underserved communities. Limited access to patient care and lack of financial assistance are among the leading causes of increased readmission rates. Recent data has demonstrated that the introduction of clinical pharmacy services to a healthcare system consistently increase cost savings and improve patient satisfaction and therapy outcomes. The purpose of this study is to determine if establishing a novel pharmacy-run service at a medical health clinic affiliated with a non-profit organization will impact the hospital's readmission rates.

Methods: A pharmacy-run clinical service will be introduced to the Florida Atlantic University Medical Health Clinic affiliated with Boca Raton Regional Hospital, which is a non-profit organization. Pharmacists and pharmacist residents will work alongside physicians and medical residents, providing pharmacological expertise. Patient's charts will be reviewed prior to their arrival and recommendations will be communicated directly to the physician or medical resident. Additionally, the pharmacy service will allow patients to visit the clinic for a one-on-one pharmacist consultation. After four months, a retrospective analysis will compare the 30-day readmission rates between patients who were seen by a pharmacist to patients who were not.
Our target population will be uninsured patients and those primarily receiving benefit from Medicare. The primary outcome is the difference seen in readmission rates between patients who were exposed to the pharmacist-run clinical service to those that were not. Secondary outcomes include physician acceptance and refusal rates of pharmacist-made recommendations and patient satisfaction with the clinic and pharmacist counseling (pharmacy

services). Types of interventions may include but are not limited to: providing medication education to physicians, suggesting dosage adjustments, and recommending medication addition or discontinuation when applicable. Descriptive statistics will be used to evaluate the impact of the pharmacist-run clinical service.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-084

Poster Title: Impact of an automated computerized provider order entry (CPOE) alert on generic dispensing rate (GDR) within an accountable care organization (ACO)

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Purpose: Healthcare stakeholders have been concerned about the increasing cost of prescription drugs in the United States. The GDR is a standard metric used by pharmacy benefit providers to evaluate performance. Higher GDRs are associated with lower prescription drug costs. The purpose of this study is to determine the impact of using an automated alert in an outpatient setting as a tool to increase the GDR within an ACO.

Methods: This research is in progress and will be submitted to the Institutional Review Board for review. A prospective interventional design will be used. The study will be conducted within an ACO. During order signing, the prescriber will be presented with a custom visual alert displaying a recommendation to substitute the prescribed brand product with a generic therapeutic equivalent. The prescriber will have the option to accept this substitution or override it. A reason has to be selected if the alert is overridden. Based on a six months retrospective review of prescribing trends, a collaborative team elected to apply this alert to Crestor (rosuvastatin). The alert will recommend substituting Crestor with an equivalent dose of generic atorvastatin. GDR and total cost reduction will be the primary and secondary endpoints respectively. The endpoints will be collected for a duration of six months pre and post alert implementation and differences will be statistically analyzed. Descriptive analysis will be used to quantify prescriber alert override rates and associated reasons. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-085

Poster Title: Evaluation of meropenem, piperacillin/tazobactam, and ceftriaxone prescribing patterns in the pediatric setting of a large, tertiary care, teaching hospital

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Purpose: Antimicrobial stewardship programs have been implemented at hospitals across the country and have shown benefit in preventing antibiotic resistance, reducing costs, and reducing multi-drug resistant bacteria. 48 hour antibiotic timeouts have been utilized to ensure clinicians reevaluate the patient's therapy and optimize treatment. Piperacillin/tazobactam, meropenem, and ceftriaxone are common broad-spectrum antibiotics used for empiric treatment and are ideal candidates for intervention. The aim of this study is to examine the prescribing patterns of piperacillin/tazobactam, meropenem, and ceftriaxone in the pediatric setting and determine if antibiotic therapy was optimized after 48 hours of empiric antibiotic therapy.

Methods: By utilizing a retrospective chart review for these medications we will be able to determine areas of improvement concerning antibiotic utilization. This will be accomplished by examining data using discern analytics and MedMined which extract data from the hospital's computerized physician order entry system. The study will implement the following inclusion criteria: age between 3 months and 18 years, patient administered at least 3 doses of ceftriaxone, meropenem, or piperacillin/tazobactam, and was admitted to the hospital. Exclusion criteria include adult patients greater than 18 years of age and patients on prophylactic antibiotics. Patient charts will be selected from 10/1/2015 to 10/1/2016. Data collected from the patient chart will include labs, clinical status, microbiology cultures, and diagnosis. The chart review will examine appropriateness of therapy, duration, route, renal dosing, de-escalation, duplication of therapy, and dose optimization at the 48-hour timeout.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-086

Poster Title: Evaluation of clinical pharmacist interventions in hospitalized human immunodeficiency virus-infected patients in an academic institution

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Purpose: Patients with human immunodeficiency virus **(**HIV) transitioning to an inpatient setting are at a higher risk for medication errors because of the complexity of antiretroviral therapy (ARV) and a lack of clinicians with specialized training in HIV. A pharmacist-led HIV stewardship program in a hospital setting can improve patient outcomes and prevent medication errors. Broward Health Medical Center (BHMC) has a historically high HIV patient population, allowing pharmacists the opportunity to have an impact on these patients' ARV regimens. The purpose of this study is to evaluate clinical interventions made by pharmacists to optimize ARV regimens in a hospital setting.

Methods: Adult patients, 18 years and older, with an HIV diagnosis admitted to our 714 bed facility, whose ARV regimens are continued during their inpatient stay, will be assessed on a daily basis by the clinical pharmacist per the standard of care at our institution. Additional patients included in this study will be those on ARV regimens for pre or post exposure prophylaxis. Patients on ARV medications solely for the treatment of Hepatitis B infection without an HIV diagnosis will be excluded. The pharmacist will monitor laboratory values and assess ARV regimens for completeness, appropriate administration, adequate opportunistic infection (OI) prophylaxis, drug-drug interactions, renal/hepatic dose adjustment, and contraindications. The pharmacist will intervene in the treatment of these patients whenever necessary in the same manner that pharmacists currently intervene in the care of these patients at our facility. Pharmacist interventions, as well as descriptive patient demographics such as age, gender, concomitant medical conditions (cardiovascular disease, cognitive dysfunction, thyroid dysfunction, renal/hepatic dysfunction, malignancies) and the reason for

admission will be recorded. The length of data collection period will be approximately 4 months.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-087

Poster Title: Hypoglycemic events: A retrospective analysis of the risk factors and insulin regimens in hospitalized patients

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Purpose: Hypoglycemia is a major cause of morbidity and mortality in the hospital setting. Adequate glycemic control is important in order to improve patient outcomes and decrease complications and infections. Despite being highly discouraged, the use of sliding scale insulin alone to treat diabetic patients while in the inpatient setting is still employed in many hospitals. This practice has been associated with numerous hypoglycemic events, many of which could be prevented by the implementation of basal bolus insulin protocols. The purpose of this study is to evaluate incidences of hypoglycemia in hospitalized patients and related risk factors.

Methods: This is a retrospective study using the electronic medical record to identify patients who experienced a hypoglycemic event while receiving insulin therapy during their inpatient stay at Broward Health Medical Center. The patients must have received inpatient treatment at Broward Health Medical Center between February and July 2016, age 18 to 100, received an insulin regimen, and had blood glucose levels less than 50 mg/dL to be included in this study. The main variables collected will include age, sex, weight, height, inpatient unit, insulin regimen, timing of insulin administration, any oral diabetic medications, medications that can contribute to hypoglycemia or hyperglycemia, diagnosis, co-morbidities, renal function, type of diabetes, most recent A1C, number of hypoglycemic events, diabetic home medications, nutrition status, length of stay, and any surgeries within the past 72 hours. All data will be deidentified and be maintained confidentially. The primary study aim is to determine the appropriateness of their insulin regimen and to identify risk factors for these hypoglycemic events. A secondary aim is to examine if the number of hypoglycemic events increases the length of stay. Descriptive and inferential statistics will be conducted as necessary to meet the needs of the data.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 9-088

Poster Title: Performance of a hospital vancomycin dosing and monitoring protocol

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Purpose: Dosing and monitoring of intravenous vancomycin at Broward Health Medical Center is carried out using a protocol with predefined frequency adjustments based on renal function. The objective of this study is to determine the performance of this protocol with regard to accuracy in achieving therapeutic serum concentrations of vancomycin in non-dialysis adult patients.

Methods: The institutional review board at Broward Health Medical Center approved this retrospective observational study. Patients were identified using electronic medical records. Men and women from a single non-critical care nursing unit aged 18-100 years were included if they received intravenous vancomycin and had an available baseline creatinine and albumin level. Dialysis patients and those with less than 2 trough serum vancomycin levels were excluded. The following data was collected: age, sex, height, weight, admission and discharge date, indication, dose received, duration of treatment, serum trough concentrations, baseline creatinine and albumin, and culture information. All data was recorded without patient identifiers and stored securely. Actual serum concentrations of vancomycin will be compared to targeted goals. Patient factors such as weight, age, sex, renal function, and albumin level will be analyzed for correlation with dosing accuracy.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-089

Poster Title: Four-factor prothrombin complex concentrate use in patients not receiving warfarin anticoagulation

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Purpose: Four-factor prothrombin complex concentrate (Kcentra) is a coagulation factor replacement product indicated for the urgent reversal of acquired coagulation factor deficiency induced by warfarin. Kcentra has not been approved by the FDA for the reversal of non-warfarin anticoagulation; however, in life-threatening bleeds secondary to non-warfarin anticoagulation, Kcentra can be considered. A recent study also found Kcentra to have benefit in liver disease coagulopathy, but questions on dosing, safety and efficacy of the drug remain. An evaluation of the use of Kcentra was performed to assess appropriate utilization of this high-cost medication.

Methods: A retrospective chart review was performed to assess the use of Kcentra from November 30, 2015 to June 30, 2016. A report was generated to identify 100 patients for whom 125 doses of Kcentra were ordered for non-warfarin reversal indications within the Florida Hospital system. Upon approval of criteria by the Drug Utilization Review Committee, patient data was reviewed to evaluate the prescribing, dosing, dispensing, administration, and safety of Kcentra. The collected information included: patient demographics, indication, prescriber specialty, adherence to mandatory order entry form, dosing, administration, presence of contraindications, order to administration timeframe, occurrence of adverse events, and 28-day survival or hospital discharge.

Results: Kcentra was prescribed for the reversal of major or life-threatening bleeds associated with apixaban or rivaroxaban in 10% of cases and for non-warfarin reversal for the purpose of urgent surgery or invasive procedure in 4% of cases. The remaining 86% of cases involved reversal of hemorrhage not associated with anticoagulant medication, such as hemorrhage

related to surgery or hepatic dysfunction coagulopathy. Ordering physician specialties were surgery (74%), critical care (20%), emergency medicine (4%), and cardiology (2%). Time between Kcentra order entry and drug administration was collected to ascertain the level of emergency. Sixty-two percent of doses were administered within 30 minutes of order entry, 20% between 31 and 60 minutes, 13% between 61 and 120 minutes, and 5% at greater than 120 minutes. Repeat dosing of Kcentra is not indicated per package insert or available literature and 18% of patients received multiple doses per bleeding episode. Contraindications to Kcentra, namely heparin-induced thrombocytopenia and disseminated intravascular coagulation, were recorded in 7% of patients prior to drug administration. Deep vein thrombotic events occurred in 4% of patients after administration. Sixty-nine percent of patients achieved 28-day survival or hospital discharge.

Conclusion: Based on the results of this medication use evaluation, there is a high utilization of four-factor prothrombin complex concentrate for unapproved indications in the surgical setting and in patients not receiving anticoagulation. There is significant variability in prescribing that deviates from the recommended clinical practice concerning usage in non-emergent situations and administration of multiple Kcentra doses per bleeding episode. Opportunity exists to improve the appropriate utilization of Kcentra.

1. Burnett AE et al. J Thromb Thrombolysis. 2016; 41: 206–232.
2. Christos S, Naples, R. West J Emerg Med. 2016 May; 17(3): 264–270.
3. Kwon JO, MacLaren R. Pharmacotherapy. 2016 Aug 22.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-090

Poster Title: Medication use evaluation: Enoxaparin dosing in patients less than 50 kilograms

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Purpose: Low molecular weight heparin (LMWH) products, such as enoxaparin, are commonly used in the inpatient setting for prevention and treatment of venous thromboembolic events (VTE). Enoxaparin has a favorable pharmacokinetic profile; however, there is not enough information regarding the safety and efficacy of LMWH in extreme weights. The purpose of this medication use evaluation is to understand the safety and efficacy of enoxaparin in patients less than 50 kilograms receiving prophylactic or treatment doses for VTEs.

Methods: This study was reviewed and approved by the Scientific Review Committee of the Florida Hospital (FH) Clinical Excellence and Research Department. A retrospective chart review will be performed to assess the use of enoxaparin in adults weighing less than 50 kilograms from January 1, 2016 through July 1, 2016. A clinical report with the eligible patients has been generated to include adults aged 18-99 years who are less than 50 kilograms and have received at least one dose of enoxaparin in the inpatient setting at one of the seven FH campuses. The following information will be collected: dose, indication, number of doses received, labs on admission (hemoglobin, hematocrit, platelets, serum creatinine), height, and weight. Anti-Xa levels will be collected if available. To monitor for adverse effects, platelets less than 100,000 units/uL, hemoglobin drop of greater than 2 g/dL, and creatinine clearance of less than 30 ml/min will be recorded. Provider documentation, including imaging studies, will be reviewed to determine whether a VTE episode occurred during hospital stay as well as mortality. A random number generator will be used to select 100 patient charts from the initial sample population. The data will be evaluated and the descriptive analysis performed will be presented to the FH Medication Use Evaluation Committee.

Results: Pending

Conclusion: Pending

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-091

Poster Title: Medication use evaluation of rosuvastatin renal dose adjustment in patients with creatinine clearance less than 30 milliliters per minute not on hemodialysis

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Julia Nickerson-Troy

Purpose: Statins are widely prescribed medications and commonly encountered in the hospital setting. While all statins do not require renal dose adjustment, the recommended maximum daily dose of rosuvastatin is 10 mg for creatinine clearances less than 30 milliliters per minute not on hemodialysis. As part of the hospital's formulary, rosuvastatin is the therapeutic interchange for atorvastatin and simvastatin, which do not require renal dose adjustment. The objective of this study is to examine the use of the appropriate renal dose adjustment of rosuvastatin in patients with creatinine clearances less than 30 milliliters per minute during hospital stay and at discharge.

Methods: This retrospective analysis was approved by the hospital's clinical excellence research group. The electronic medical record will be used to generate a de-identified report of all patients with at least one dose of rosuvastatin ordered during the month of June 2016. The total number of doses ordered at all seven campuses will be calculated to determine the total study population, which will then be used to determine the population size and percentage ordered at each campus. One hundred patients will be randomly selected from the total study population proportional to the campus percentage ordered. Patients will be included if a dose of rosuvsastatin was received and had a creatinine clearance less than 30 milliliters per minute. Patients receiving hemodialysis during their stay will be excluded. The following data will be collected: dose of rosuvastatin administered, number of doses received, presence of therapeutic interchange, and statin name and dose prescribed at discharge. All available patients' creatinine clearances throughout hospitalization will be assessed to determine if the correct dose was administered based on creatinine clearance. The Modification of Diet in Renal Disease and Cockcroft-Gault equations will be utilized to determine renal function.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-092

Poster Title: Medication use evaluation of esmolol in septic shock

Primary Author: Amy Talana, Florida Hospital East Orlando, FL; **Email:** amy.talana@flhosp.org

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Purpose: Several studies have supported beneficial effects from esmolol in septic shock patients with tachycardia. Benefits included increases in stroke volume and perfusion to vital organs as well as decreases in mortality and fluid and vasopressor requirements. The objective of this study is to evaluate how esmolol is being used in septic shock patients and to identify opportunities for improvement in its medication use process.

Methods: As a quality improvement project, this study met criteria for Institutional Review Board exemption and was approved by the Drug Utilization Review Committee. Patients on esmolol between June 30, 2014 and June 30, 2016 will be identified via an electronic medical record report. Septic shock patients that received esmolol for at least 4 hours in the intensive care unit (ICU) will be reviewed for the following: hospital and ICU length of stay, duration of esmolol and vasopressors, vasopressor requirements, percentage of time within the order-specified heart rate goal and within the literature-supported heart rate goal of 80 to 94 beats per minute, adverse effects, use in contraindicated patients, and mortality. In addition, dosing strategies, use of hold parameters, and demographic data will be collected. Appropriateness of esmolol therapy duration and nurse-driven titration will be evaluated.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-093

Poster Title: Epoetin sliding scale and dose rounding: Determination of best practice deviations

Primary Author: Chelsea Rohrer, Florida Hospital East Orlando, FL; **Email:** chelsea.rohrer@flhosp.org

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Purpose: At Florida Hospital, epoetin is sometimes prescribed on a sliding scale based on hemoglobin levels to target patient-specific doses. There is no recommended dosing strategy for efficacy or reduction of risks associated with epoetin alfa. Manufacturers suggest using the lowest possible weight-based dose of 50-100 units/kg to prevent or reduce blood transfusions and maintaining that dose for at least four weeks before making therapeutic adjustments in 25% increments, unless to reduce the dose for side effects(1,2). The purpose of this medication use evaluation is to determine clinical and financial impacts of prescribing epoetin sliding scale.

Methods: Retrospective chart review of 100 adult inpatients receiving epoetin sliding scale regimen for renal dysfunction was performed. Data was collected for patient demographics, past medical history, indication, administration comments, doses received, dialysis schedule, laboratory information, occurrence of side effects, and concomitant medications. The epoetin sliding scale doses received and their associated costs were compared with that of the recommended weight-based dose for each patient. Incidence of side effects, proper indication, contraindications, and abnormal laboratory values were analyzed.

Results: Of 100 patients prescribed epoetin sliding scale, 66 patients received a total of 159 doses. Orders included sliding scale doses as low as 4,000 units and as high as 60,000 units. The average sliding scale dose was 229.4 units/kg. Doses were adjusted an average of 2.3 times over an average of 5.5 days. 49% of orders were continued until discharge even if patient no longer required subsequent doses. The average hemoglobin level on the day a dose was received was 8.72 g/dL; hemoglobin was above 11 g/dL within 24 hours of a dose in ten patients. Twenty-one patients with coronary artery disease and 22 patients with congestive

heart failure received doses. Eight patients received IV iron, three patients received PO iron and 20 patients required blood transfusions. The average cost of a sliding scale dose was $219.59 compared to the average weight-based dose cost of $84.99. Prescribing a weight-based dose could have potentially saved $324.26 per patient in drug cost alone.

Conclusion: There is no evidence to support or refute the use of epoetin sliding scale. However, the variability in prescribing patterns, potential for increased risk of side effects due to elevated doses, and potential for cost savings with weight-based dosing regimens suggests that there is little utility for epoetin sliding scale regimens.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-094

Poster Title: Evaluation of erythropoietin stimulating agents on hemoglobin level in critically ill patients with acute kidney injury

Primary Author: Heather Johnson, Florida Hospital Orlando, FL; **Email:** heather.johnson@flhosp.org

Additional Author (s):
Otsanya Ochogbu

Purpose: Epoetin alfa (EPO) was selected for a medication use evaluation in the intensive care setting due to routine observation of use of EPO for treating anemia due to acute kidney injury (AKI) in critically ill patients. This is an unapproved indication with current literature unable to support use in this patient population. As there are substantial costs and adverse effects associated with use of EPO, it is prudent to retrospectively evaluate the use of EPO for treatment of anemia in the critically ill patient with AKI to establish a risk-benefit profile.

Methods: This is a retrospective chart-review conducted across intensive care units (ICU) within a multihospital system. Adult patients admitted to ICUs from 6/30/2013 to 6/30/2016 who received a dose of EPO with a concurrent diagnosis of acute kidney injury defined by AKIN criteria were included. Patient charts were reviewed for exclusion criteria including chronic kidney disease or unwillingness to receive blood products. Baseline demographics and the following endpoints will be collected; hospital/ICU length of stay, pertinent past medical history including: hypertension, venous thromboembolism, seizure, cancer, and myelodysplastic syndrome, dose of EPO, serum creatinine and urine output, renal replacement therapy initiation, hemoglobin levels, transfusion requirements, iron studies and iron repletion therapy. The primary outcome is to determine the impact of EPO on hemoglobin levels in patients with AKI. Secondary outcomes include determining influence on transfusion requirements and incidence of adverse events, while establishing the frequency of EPO use in this population.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-095

Poster Title: Medication use evaluation of ceftazidime/avibactam and ceftolozane/tazobactam use in a large community hospital system

Primary Author: Carlos Jimenez, Florida Hospital Orlando, FL; **Email:** carlos.jimenez2@flhosp.org

Additional Author (s):
Lauren Hunt

Purpose: Ceftazidime/avibactam (C/A) and ceftolozane/tazobactam (C/T) are both non-formulary antimicrobial agents that are newly approved for the treatment of multi-drug resistant gram negative infections. The use of C/A and C/T was broadly evaluated with the primary objective of assessing utilization. Secondary objectives include appropriate dosing, adverse events, cost analysis, and potential for future clinical pharmacy interventions including infectious diseases consults. Based on the findings and supportive evidence, the intent of this medication use evaluation will be to create criteria for use.

Methods: This quality improvement project has been determined by our organization to be exempt from Florida Hospital IRB approval criteria as it is non-human subject research and follows our organization's patient safety work product guidelines. A retrospective chart review was performed on all patients greater than 18 years old who received C/A or C/T between 09/01/2015 and 08/31/2016 while admitted within the Central Florida Hospital System. Data collected from the electronic medical record include: patient demographics (gender, weight, length of stay, admission to ICU, mechanical ventilation usage, readmission, history of cystic fibrosis), renal function, usage of C/A or C/T, duration of therapy, dosing interval, indication, use of extended-infusion administration, broad spectrum antibiotic use 90 days prior to admission, number of doses given, duration of therapy, microbiological data (including MIC data for C/A and C/T), placement of infectious disease consult, and prescriber information.

Results: Data collection has begun and results will be presented at the Midyear clinical meeting.

Conclusion: Research in progress.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-096

Poster Title: Evaluation of pharmacy-directed vancomycin dosing per institution guideline in a large community hospital

Primary Author: Meghan Bloxam, Florida Hospital Orlando, FL; **Email:** meghan.bloxam@flhosp.org

Additional Author (s):
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Purpose: Vancomycin is a highly utilized antimicrobial agent in internal medicine patients. This agent requires dosing within a narrow therapeutic index to achieve clinical effectiveness and avoid adverse effects. Patient-specific variables affect the dosing regimen required to achieve therapeutic concentrations. Our institution guideline uses actual body weight and renal function to determine initial dosing recommendations, however other population-based kinetic calculations may be useful for effective dosing strategies. The frequency in which therapeutic vancomycin concentrations were achieved through use of the pharmacist-directed dosing guideline was undetermined. The purpose of this study was to evaluate pharmacist-directed dosing of vancomycin per institution guideline.

Methods: This quality improvement project was determined by our organization to be exempt from IRB approval criteria as it was non-human subject research and followed our organization's patient safety work product guidelines. The primary outcome was the frequency in which therapeutic vancomycin concentrations were achieved through compliance with pharmacist-directed dosing standards set by the institution guideline. A retrospective chart review was conducted over a period of 3 months for eligible patients who received pharmacy-directed vancomycin dosing per institution guideline. Eligible patients included those over the age of 18 years old who were admitted to an internal medicine unit within our institution, received at least 4 doses of vancomycin, and had at least one measured vancomycin concentration. The study population was narrowed to include approximately 100 eligible patients. The hospital electronic medical record was used to identify and randomize eligible patients and for all data collection.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-097

Poster Title: Evaluation of venous thromboembolism prophylaxis in orthopedic patients within a large community hospital system

Primary Author: Tina Wang, Florida Hospital Orlando, FL; **Email:** tina.wang@flhosp.org

Additional Author (s):
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Michelle Thomas

Purpose: Orthopedic surgery is considered a high risk factor for VTE. A medication use evaluation was completed in order to assess for appropriate use of VTE prophylaxis agents, such as enoxaparin, heparin, fondaparinux, and rivaroxaban, in orthopedic patients undergoing either hip arthroplasty (THA) or total knee arthroplasty (TKA). The primary objective was to assess for appropriateness of utilization including dosing and duration. The secondary objective included readmission rates and complications related to VTE prophylaxis, such as VTE or bleeding. The potential for future direction is to create a protocol for VTE prophylaxis in our orthopedic patients.

Methods: This quality improvement project has been determined by our organization to be exempt from FH IRB approval criteria as it is non-human subject research and follows our organization's patient safety work product guidelines. A retrospective chart review will be conducted for approximately 100 eligible patients who received VTE prophylaxis with any of the following: enoxaparin, heparin, fondaparinux, and rivaroxaban between 09/01/2015 and 09/01/2016. Data collected from the electronic medical record include, but not limited to: patient demographics, medication, dose, timing of initiation, duration of therapy, directions, type of surgery, renal function, and complete blood count.

Results: Data collection has began and results will be presented as ASHP Midyear Clinical Meeting 2016.

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-098

Poster Title: Implementation of a relative value unit system to predict pharmacy technician workload

Primary Author: Fernando Blanco, Florida Hospital Orlando, FL; **Email:** fernando.blanco@flhosp.org

Additional Author (s):
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Jonathan Girnys
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Purpose: The healthcare landscape continues to remain in flux as it transitions from a fee-for-service to a value-based reimbursement model. Pharmacy departments face mounting financial pressures to reduce their cost structures and are tasked with determining the appropriateness of allocated departmental staffing resources. A relative value unit (RVU) system can be applied by hospital pharmacy departments to better determine the allocation of resources and improve efficiency. The purpose of this study was to create and implement a relative value unit system to capture pharmacy technician workload in order to guide staffing decisions by hospital pharmacy departments.

Methods: This is a single center quality improvement initiative evaluating pharmacy technician workload between October 2016 and February 2017. Time-motion studies will be used to create the RVU system by analyzing the time spent in seconds per activity and standardizing to the lowest common value. The mean time necessary to perform a task will be used for each activity by means of twenty direct observations, determining the average time required to complete the task, and establishing a standard deviation to the mean measurement. Once standardized, the numeric value assigned to each activity is known as an RVU. Workload is determined by multiplying the RVU by the volume, or frequency, for the particular activity. The mean frequency of reported tasks will be identified for each activity through use of available reports. The outcome is the average number of RVU's per hour worked by a productive technician. A correlation analysis will be used with the goal of identifying a relationship between RVU's and the hospital's volume metrics (e.g. census, projected admissions) as well as

workload metrics (e.g. doses dispensed, orders verified, doses charged) to allow the department to objectively and consistently adjust staffing levels based on expected workload.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-099

Poster Title: Evaluation of venous thromboembolism (VTE) prophylaxis in patients with chronic liver disease at a large community medical center

Primary Author: Jill Mendoza, Florida Hospital Orlando, FL; **Email:** jill.mendoza@flhosp.org

Additional Author (s):
Larry Diamond

Purpose: Chronic liver disease patients often have coagulopathies resulting in elevated INR, thrombocytopenia, and anemia, routinely excluding these patients from receiving chemical venous thromboembolism (VTE) prophylaxis. Studies showed that patients with rate of coagulopathies are not protected against VTE. A medication use evaluation was completed to assess current use of heparin, enoxaparin and fondaparinux in chronic liver patients. The primary objective was to assess the rate of chemical VTE prophylaxis. Secondary objectives included bleeding events, coagulopathies, and readmission. The potential for future direction is to identify VTE prophylaxis at our institution and modify the screening process for these patients.

Methods: This quality improvement project has been determined by our organization to be exempt from Florida Hospital Institutional Review Board approval criteria as it is non-human subject research and follows our organization's patient safety work practice guidelines. A retrospective chart review was conducted for eligible patients with chronic liver disease from September 1st, 2015 to September 1st, 2016, and have received VTE prophylaxis with any of the following agents: heparin, enoxaparin and fondaparinux. Patients were identified based on their diagnosis-related group code on admission. Data collected from electronic medical records included, but was not limited to: patient demographics, anticoagulant use (if any), dose, duration of therapy, readmission rates, complete blood count, values to assess renal function, and requirement of blood transfusion(s).

Results: Data collection has begun, results will be presented at the 2016 ASHP Midyear Clinical Meeting

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-100

Poster Title: Evaluation of tolvaptan use in heart failure patients in a large community hospital

Primary Author: Sienna Smith, Florida Hospital Orlando, FL; **Email:** sienna.smith@flhosp.org

Additional Author (s):
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Danielle Honein
Kristie Zappas
Melissa Royero

Purpose: Patients presenting to the hospital with heart failure exacerbation are often fluid overloaded. Due to hypervolemia, they can have severe hyponatremia and are at risk for having active cognitive symptoms. Tolvaptan, a vasopressin antagonist, may be considered to improve sodium concentration due to its mechanism of excretion of free water. The primary objective of this study is to evaluate for appropriateness of utilization of tolvaptan according to our institution's order set. Secondary objectives will include rate of sodium correction, instances of subsequent hypernatremia, and subsequent diagnoses of osmotic demyelination syndrome.

Methods: This quality improvement project has been determined by our organization to be exempt from FH IRB approval criteria as it is non-human subject research and follows our organization's patient safety work product guidelines. A retrospective chart review will be conducted for eligible patients who received tolvaptan between 09/30/2015 to 09/30/2016. Eligible patients include those over the age of 18 years old admitted to Florida Hospital Orlando with a heart failure diagnosis. Data collected from electronic medical record includes: patient demographics, prescriber specialty, dose, frequency, duration of therapy, number of doses administered, utilization of required tolvaptan order set, patient-met criteria of tolvaptan order set, contraindications to tolvaptan, sodium levels before tolvaptan administration, sodium levels at subsequent six, twelve, and twenty-four hour intervals after tolvaptan administration, subsequent diagnoses of osmotic demyelination syndrome, and any interventions for sodium overcorrection or rapid correction.

Results: Results of this study are pending data collection.

Conclusion: Conclusions of this study are pending data collection.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-101

Poster Title: Medication use evaluation of ertapenem in the surgical patient population of a large community hospital

Primary Author: Ravi Bacchus, Florida Hospital Orlando, FL; **Email:** ravibacchus22@gmail.com

Additional Author (s):

Purpose: Ertapenem is a carbapenem antibiotic indicated for prophylaxis of the surgical site following colorectal surgery and is used off-label to treat other surgical site infections. Per the Clinical practice guidelines for antimicrobial prophylaxis in surgery, ertapenem is a recommended antibiotic in colorectal surgery prophylaxis and is also included in the IDSA SSTI Guidelines. Within our institution, prescribing of ertapenem is restricted to infectious diseases specialists and colorectal surgeons. A medication use evaluation was completed to assess for utilization of ertapenem in the surgical patient population including perioperative use. The primary objective assessed appropriateness of utilization including indications and directions.

Methods: This quality improvement project has been determined by our organization to be exempt from FH IRB approval criteria as it is non-human subject research and follows our organization's patient safety work product guidelines. A retrospective chart review was conducted for eligible patients who received ertapenem between August 1, 2016 and September 30, 2016. Eligible patients included those over the age of 18 years old within our hospital. A randomly generated list narrowed the study population to approximately 100 of all eligible patients. Data collected from electronic medical record included: patient demographics, prescriber specialty, surgical site infections, length of stay, hospital readmissions, dose, directions, indication, days of therapy on ertapenem, total days on antibiotics, previous inpatient antibiotics within the same admission, admission/discharge dates, date medication initiated/discontinued, number of doses administered, risk factors for multidrug-resistant organisms, antibiotic use in transitions of care, antibiotic single-use doses, and perioperative antibiotic doses.

Results: Results of the study are pending data collection.

Conclusion: Conclusions of the study are pending data collection.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-102

Poster Title: Medication use evaluation of phytonadione for coagulopathy reversal in patients with liver disease

Primary Author: Michele Wiltse, Florida Hospital Orlando, FL; **Email:** mwiltse180@gmail.com

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Purpose: Patients with liver disease frequently present with significant coagulopathies including an elevated PT/INR. Practitioners seek to reverse elevated PT/INR in anticipation of invasive procedures with the use of phytonadione. However, controversy exists over the effectiveness of phytonadione in this patient population. A medication use evaluation was completed to assess for appropriate use within our hospital system. The primary objective was to characterize the degree of reversal (PT/INR) of phytonadione administration in liver disease patients. The secondary objectives included delay in procedure due to insufficient PT/INR reversal, degree of reversal with concomitant use of reversal agents, and occurrence of adverse effects.

Methods: This quality improvement project has been determined by our organization to be exempt from FH IRB approval criteria as it is non-human subject research and follows our organization's patient safety work product guidelines. A retrospective chart review was conducted for eligible patients who received phytonadione within the past year. Eligible patients included those over the age of 18 years old within our hospital system. A randomly generated list narrowed the study population of all eligible patients to identify 100 unique patients for analysis. Data collected from electronic medical records included: patient demographics, prescriber information, admission/discharge dates, procedure type, type of liver disease (MELD-Na and/or Child Pugh Score), date/time medication initiated, date/time of procedure, dose /route (oral, SC, IV)/number of doses administered, use of concomitant reversal agents (FFP/PCC/platelets/desmopressin), PT/INR (baseline and after administration), adverse effects (infusion reactions, bleeding and/or clotting), length of stay, readmissions, cost, and concurrent use of other medications that may affect PT/INR (antibiotics, etc).

Results: Results are pending as this is research in progress

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-103

Poster Title: Medication use evaluation of nebulized budesonide and formoterol in medical intensive care unit patients in a large community hospital

Primary Author: Weishi Wang, Florida Hospital Orlando, FL; **Email:** weishi.wang@flhosp.org

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Purpose: Budesonide, an inhaled corticosteroid, and formoterol, a long acting beta agonist, are both indicated for asthma and COPD. These medications have to be administered by certified respiratory therapist (CRT) in the intensive care unit (ICU). The primary objective of this retrospective analysis is to assess the utilization of nebulized budesonide and formoterol in medical ICU patients based on labeled indications and previous outpatient use. The secondary objective is to assess financial impact of these medications on patients who did not meet criteria for use including CRT time spent for administration and costs of the medications.

Methods: This quality improvement project has been determined by our organization to be exempt from International Review Board (IRB) approval criteria as it is non-human subject research and follows our organization's patient safety work product guidelines. A retrospective chart review will be conducted for approximately 100 eligible patients who received nebulized budesonide and formoterol during their inpatient hospital stay. Eligible patients include those over the age of 18 years old and admitted into the medical ICU. Data collected from electronic medical records include: patient demographics, dispensing areas, prescriber information, dose, indications, directions, previous home inhalers, therapeutic interchange information, admission/discharge dates, date medication initiated/discontinued, type of dispense, number of doses administered, inpatient transfer information, and concomitant use of inhalers. The percentage of the patients who met the dispensing criteria will be calculated and analyzed.

Results: Pending data collection.

Conclusion: N/A due to pending data collection.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Evaluative Study

Session-Board Number: 9-104

Poster Title: Fentanyl Transdermal Patch Utilization in Post-Cardiac Surgery

Primary Author: Rebekka Adamson, Florida Hospital Orlando, FL; **Email:** rebekkaadamson@gmail.com

Additional Author (s):

Purpose: Though utilization of the fentanyl transdermal system is contraindicated for the management of postoperative pain, utilization remains common among postoperative cardiothoracic surgery patients at our institution. The goal of this study is to evaluate the utilization, safety, and effectiveness, of the fentanyl transdermal system in this patient population.

Methods: This medication-use evaluation will be submitted for approval by the Institutional Review Board. Postoperative cardiothoracic surgery patients will be included in the analysis if a fentanyl transdermal patch was applied during their postoperative hospital stay. The electronic medical record will be utilized to perform the retrospective chart review and gather all relevant data. Patient demographics, including whether the patient was opiate-naïve at admission, surgical procedure performed, and history of drug abuse or misuse will be collected. All medication order characteristics, including order duration (number of patch applications), and dose ordered will be recorded. Efficacy will be assessed via pain scores, including maximum pain score recorded in the first 24 hours after patch application, and whether the patients' pain score goals were met in the first 12 and 24 hours. Additional orders for pain medications (including NSAIDs, short-acting opioids, muscle relaxers) while receiving a fentanyl patch will be investigated, as well as the use of any "as-needed" pain medications while a fentanyl patch is applied. Safety will be assessed by investigating the following events: use of naloxone, new constipation medication orders after patch application, falls, altered mental status or reintubation, and incidence of respiratory depression. Additional information will be gathered on whether a patient receives a fentanyl patch within 24 hours of discharge or receives a prescription for a fentanyl patch at time of discharge.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-105

Poster Title: Evaluation of belatacept use in renal transplant patients transitioned from calcineurin inhibitors in a large community medical center

Primary Author: Jennifer Elfman, Florida Hospital Orlando, FL; **Email:** jennifer.elfman1@gmail.com

Additional Author (s):
Lauren Lasater

Purpose: Belatacept is a fusion protein composed of the Fc fragment of the human IgG1 immunoglobulin, a molecule crucial in the activation of T-cells through the co-stimulation, therefore blocking T cell activation. Current standard of care regimens include calcineurin inhibitors (CNIs) which can lead to nephrotoxicity and deterioration of kidney function. Belatacept is an option for non-CNI based immunosuppressant regimens. The purpose of this study was to evaluate indications and dosing regimens in kidney transplant patients transitioned from CNI based therapies to belatacept. Future direction for this research is to create a protocol for use.

Methods: This quality improvement project has been determined by our organization to be exempt from IRB approval criteria as it is non-human subject research and follows our organization's patient safety work product guidelines. In this retrospective single center study, data was gathered on all patients identified via discern analytics who received belatacept between September 2013 and September 2016. The data collected from electronic chart review included: patient demographics, weight, epstein barr virus status, renal biopsy results, dosage, frequency, baseline and post transition serum creatinine trends, acute rejection, graft loss, adverse side effects, and death.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-106

Poster Title: Medication evaluation of antimicrobial use for kidney and urinary tract infections diagnosed throughout a large community hospital system

Primary Author: Xavier Torres, Florida Hospital Orlando, FL; **Email:** torres.xavier9@gmail.com

Additional Author (s):
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Purpose: Urinary tract infections (UTI) are one of the most frequently encountered infections in the community hospital setting. Assessing the antimicrobial practices may help set a focus for future clinical pharmacy interventions that will improve patient outcomes and prevent adverse effects including the development of antimicrobial resistance. Therefore, a medication use evaluation will be completed to assess for utilization of antimicrobials for the management of kidney and UTI within our hospital system.

Methods: This quality improvement project has been determined to be exempt from IRB approval criteria as it is non-human subject research and follows our organization's patient safety work product guidelines. A retrospective chart review will be conducted for eligible patients who received antimicrobials between August 1, 2016 and August 31, 2016 for the indication of kidney and urinary tract infection. Eligible patients include females over the age of 18 years old treated for treated for this indication either at the outset or during their stay as inpatients. A randomly generated list will narrow the study population to approximately 100 eligible patients. The primary objective is to quantify the duration and selection of antibiotic treatment for this indication. assess for appropriateness of utilization including empiric and subsequent management pre- and post-culture results, respectively. Secondary outcomes assessed will include length of stay, adverse events, comparison to current guideline recommendations, and onset of Clostridium difficile during the same admission. Data collected from electronic medical records will include patient demographics, admission and discharge dates, antibiotics ordered, date medication initiated and discontinued, number of doses administered, previous antibiotic use in the previous 90 days, and microbiological data.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-107

Poster Title: Cost-saving potential for bivalirudin using percutaneous coronary intervention (PCI) clinical pathway

Primary Author: Lauren Nienas, Florida Hospital Orlando, FL; **Email:** lauren.nienas@flhosp.org

Additional Author (s):

Purpose: Bivalirudin and unfractionated heparin (UFH) are two antithrombotic agents utilized during percutaneous coronary intervention (PCI) to prevent thrombus formation. Head-to-head trials offer conflicting data on the preferred agent in terms of ischemic and bleeding events. Contemporary trials suggest UFH to have reduced in-stent thrombosis incidence compared to bivalirudin, which may have a reduction in bleeding events. Additionally, bivalirudin comes at an increased cost compared to UFH. The study purpose is to identify patients appropriate for UFH use and estimate projected cost-savings associated with the reduced bivalirudin utilization through a PCI clinical pathway implementation.

Methods: This retrospective, observational study will be submitted to the Institutional Review Board for approval. The electrical medical record system will identify patients and include acute coronary syndrome (ACS) admissions who received bivalirudin during PCI. All patient identifiers will be removed to maintain confidentiality. Patients will be excluded if they have a history of heparin-induced thrombocytopenia, age greater than 75 years old, or a high risk of major bleeding (greater than 5%). Inclusion and exclusion criteria were designed based on a proposed clinical pathway to select patients who received bivalirudin but were appropriate to receive UFH. Cost-analysis will be performed to estimate the potential cost savings associated with implementing this pathway and increasing UFH in PCI. Collected data points include age, gender, weight, ACS classification, access site, stent type , concurrent anticoagulants and antiplatelet medications (aspirin, P2Y12 inhibitors, or glycoprotein IIb/IIIa inhibitors), bivalirudin infusion duration, periprocedural intra-aortic balloon pump utilization, and post-procedure hematocrit. Patients will also be assessed for 30-day readmission and post-procedure ischemia or bleeding event incidence.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-108

Poster Title: Medication use evaluation of eltrombopag post hematopoietic stem cell transplantation (HSCT) in a large community hospital

Primary Author: Angela Boyd, Florida Hospital Orlando, FL; **Email:** angela.boyd@flhosp.org

Additional Author (s):
Jan Nelson
Shayna Smith

Purpose: Eltrombopag is a thrombopoietin receptor agonist which stimulates platelet production. An innovative use of eltrombopag has been reported in the treatment of thrombocytopenia post-hematopoietic stem cell transplantation. The prescribing practice of eltrombopag, within this specific patient population, will be identified to standardize use and improve patient care as well as add to current literature. The primary objective is platelet count greater than or equal to 50x10^9/L for 7 consecutive days without platelet transfusions. Secondary objectives include time from transplant to initiation of eltrombopag, dose modification strategy, duration of therapy, adverse events, and cost to the hospital system.

Methods: This quality improvement project has been determined by our organization to be exempt from FH IRB approval criteria as it is non-human subject research and follows our organization's patient safety work product guidelines. A retrospective chart review was conducted for eligible patients who received eltrombopag between September 30, 2014 through September 30, 2016. Eligible patients include those 18 years of age or older who underwent HSCT. Due to the relatively small study population, all patients meeting eligibility were included in the analysis. Data collection from electronic medical record includes: patient demographics, platelet count, platelet transfusion date(s), date medication initiated/discontinued, dose/titration schedule, disease indication for transplant, transplant conditioning regimen, transplant type/date, liver function (ALT, AST, t.bili), and development of bone marrow fibrosis.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-109

Poster Title: Development of a pharmacy service productivity tool within a community hospital

Primary Author: Mary Munchalfen, Florida Hospital Orlando, FL; **Email:** mary.munchalfen@outlook.com

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Purpose: The current economic environment challenges healthcare organizations to provide financial justification to the ever-increasing costs in healthcare. The use of a pharmacist productivity metric tool would serve to guide pharmacy leadership towards the appropriate use of pharmacist resource acquisition and allocation. The objective of this study is to design a tool used to determine a minimum set of productivity standards applicable to the delivery of pharmacy services within an organization in an effort to optimize patient care and reduce costs.

Methods: A single-center, observational analysis of pharmacist workload productivity will be performed assessing pharmacist relative value units. The relative value unit method will serve as an internal benchmarking assessment. Each activity performed by a pharmacist will be assigned a relative value unit. Pharmacist relative value unit activities will range from medication order verification to a variety of clinical pharmacy interventions. Time standards including time-to-verify, time-to-complete, and time-to-response metrics of pharmacist activities performed will be collected. Time standards will be validated by an expert panel and weighted based upon medication acuity. The productivity metric tool would provide real-time data on a variety of distributive and clinical pharmacist responsibilities.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-110

Poster Title: Medication use evaluation of pantoprazole continuous infusion

Primary Author: Bibidh Subedi, Florida Hospital Orlando (Orlando Campus), FL; **Email:** bsubedi23@ufl.edu

Additional Author (s):
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Purpose: Proton pump inhibitors (PPIs) are utilized for gastrointestinal (GI) bleeding prophylaxis in patients who have nonvariceal GI bleed. Current recommendation is to infuse PPIs for a duration of 72 hours and then transition to intermittent dosing. In practice however, PPI infusions are continued beyond 72 hours, potentially increasing the risks for adverse events. This study sought to analyze pantoprazole infusion usage in seven affiliated community teaching hospitals.

Methods: A retrospective analysis of 100 patients who received pantoprazole infusion was conducted in seven affiliated community teaching hospitals. The efficacy outcomes included bleeding cessation, documented re-bleeding, or death. Safety outcomes included documented clostridium difficile infection, pneumonia, or hypomagnesemia. Additional data collected were patient's age, gender, pertinent past medical history, pertinent home medications, presenting symptoms, service ordering pantoprazole infusion, indication for usage, duration of therapy, concomitant therapy, step down therapy, ICU length of stay, and hospital length of stay.

Results: n/a

Conclusion: n/a

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-111

Poster Title: Assessing utilization of an upated smoking cessation order set in a community hospital health system

Primary Author: Stephanie Hughes, Florida Hospital-Celebration Health, FL; **Email:** stephanie.hughes@flhosp.org

Additional Author (s):
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Purpose: A smoking cessation order set in the electronic order entry system was recently updated. This update included providing nicotine dosing and combination regimens consistent with current guidelines. Prior to this update, an order set existed; however, it had to be actively searched for. This recent update now includes a trigger (alert) to suggest utilizing the order set when a smoker (> 10 cigarettes per day) is identified. This study may provide data to determine if the order set is being used and whether it should be changed from suggested to mandatory for identified patients who smoke.

Methods: This retrospective chart review has been approved by the hospital's clinical excellence research group for quality assurance. A report from the electronic medical records system will be generated on patients who were identified as smokers from August 5, 2015 to August 5, 2016. The data fields for this report include financial identification number, unit/room number, attending physician, smoking documentation indicator (whether patient reported smoking at admission when health history was obtained), smoking cessation order set indicator (whether order set was used or not), and orders generated for nicotine replacement outside the order set. Nicotine replacement therapy options available on formulary include nicotine patch (14 mg and 21 mg) and nicotine gum (2 mg and 4 mg). Systematic random sampling will be used to select 150 patients for this evaluation. Patient-specific data will be secured at all times. This data will be used to assess the utilization of the order set and nicotine replacement therapy. This may help determine if the currently suggested order set trigger should become a mandatory trigger for patients who smoke. Other areas to be assessed include adverse events from nicotine therapy, prescriber trends, and if referral to an outpatient

community resource for smoking cessation is documented upon discharge. Data will be presented to the hospital system to show trends and areas for improvement.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-112

Poster Title: Interdisciplinary population management in an integrated delivery network (IDN) targeting Medicare diabetes members and the effect on clinical outcomes and quality metrics.

Primary Author: Myla Ross, Health First Health Plans, FL; **Email:** myla.ross@health-first.org

Additional Author (s):
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Purpose: The Medicare Star Rating System is an important tool used by members and the healthcare industry to evaluate the quality of care provided by health plans. Health plans are awarded for 5 star ratings with increased resources and flexibility within the industry. This flexibility allows a health plan to provide high quality care and optimize system and member resources. A multimodal management of Medicare type 2 diabetics is necessary for better clinical outcomes and will have a positive impact on the Plan's quality metrics.

Methods: Permission will be obtained from the plan's ethics committee. We will identify our Medicare members diagnosed with type 2 diabetes. These members will benefit from a diabetic care plan that includes appropriate disease state management based on the American Diabetes Association guidelines (2016). Members will be identified by a risk stratification tool using clinical and socioeconomic information, provider referrals, chart reviews, comprehensive health assessments (CHAs), provider scorecards, and self-referrals. Pharmacists will provide in-person and/or telephonic medication therapy management and disease management reviews to ensure guideline driven therapy. Pharmacists will also identify and address barriers to adherence and close care gaps. The Plan's interdisciplinary team, including clinical care coordinators, case managers, social workers and providers will work with the pharmacists to provide members diabetes education, financial information and follow up to assure adequate treatment and resources during a transition of care. Clinical and quality outcomes will be measured. These include A1c, blood pressure, guideline adherence and care gaps closed. Care gaps include statin therapy, annual eye exams, blood pressure control and kidney disease monitoring. Medication adherence will be measured using pharmacy claims data. We will use the electronic medical record (EMR) for member information and notification to providers. We

will document interventions in a spreadsheet and analyze the data accordingly. The interdisciplinary team will have a positive impact on all of the plan's diabetic quality metrics.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-113

Poster Title: Impact of an interdisciplinary team managed protocol on hospital readmissions for heart failure

Primary Author: Rizwan Khaliq, Health First Health Plans, FL; **Email:** rizwan.khaliq@health-first.org

Additional Author (s):
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Jeveire Moore

Purpose: Heart Failure (HF) affects nearly 5 million Americans nationwide and has an estimated yearly cost of $30.7 billion. Although HF medication therapy has improved significantly, an estimated 24% of members are readmitted within 30 days. Our interdisciplinary team consisting of pharmacists, case managers, providers and social workers will work on a multimodal approach within our integrated delivery network to reduce our hospital readmission rates.

Methods: The plan's ethics committee will be asked for approval to conduct research. Members will be identified through our embedded pharmacists program, risk stratification of hospital admissions, pharmacy claims, medication therapy management (MTM) referrals, and medical claims. The American College of Cardiology/American Heart Association (ACC/AHA) and the New York Heart Association (NYHA) guidelines will be used to evaluate the member's therapeutic regimen. Medication adherence will be measured throughout the study period with pharmacy claims. Pharmacists will reconcile medications during a member's transition of care by educating members and making clinical recommendations to providers. Transitions of care include going from hospital to home, hospital to long term care facilities, and physician office to home. Acceptance or denials of recommendations will be tracked in order to determine their effectiveness. Heart Failure kits will be utilized to evaluate key components of disease management. Clinical outcomes and hospital readmission rates will be measured. Outcomes to be measured include abnormal weight increases, symptoms reported, and medication adherence.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-114

Poster Title: Assessment of multidisciplinary intervention in prevention of hospitalization of members with COPD.

Primary Author: Jelena Cusanelli, Health First Health Plans, FL; **Email:** jelena.cusanelli@health-first.org

Additional Author (s):
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Purpose: Chronic Obstructive Pulmonary Disease is associated with high risk of mortality, high death rates, and significant burden on healthcare. Inappropriate use of inhalers, low literacy, and non-adherence are major factors contributing to hospitalizations.
The Plan recognizes the importance of multidisciplinary approach in COPD management. Identification of barriers to disease state education and early intervention is a key to eliminating COPD readmissions. The Plan's goal is to develop strategies and evaluate the effects of an interdisciplinary team that is using a multi-modal approach to reduce COPD readmission rates.

Methods: The Plan's Ethics Committee will be asked for approval to conduct a research. Members will be identified by the medical and pharmacy claims, MTM referrals, embedded pharmacist clinics, health fairs, and risk stratification reports. Our interdisciplinary team consists of clinical care coordinators, case managers, providers, respiratory technicians, and pharmacists. Member disease management will be provided at every encounter. Members will receive education for appropriate breathing technique, use of durable medical equipment, and use of inhalers and nebulizers to ensure appropriate delivery of medications. Smoking cessation and transition of care will be essential parts of our intervention. We will monitor members' adherence to the therapy and assess the need for financial assistance to remove the economic barrier. Home visits and phone calls will be made to ensure all members' needs are met, including transportation and safety concerns. We will evaluate clinical outcomes and any care gaps that need to be closed. Clinical outcomes and medication adherence rates will be measured. These include medication adherence, carbon monoxide levels, and symptom control using simple survey. To prevent further exacerbations and complications, members will be

encouraged to get seasonal flu and pneumonia vaccines done as soon as they get stable, if that was done previously. We will document all interventions in a spreadsheet and analyze the data accordingly.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 9-115

Poster Title: Investigating the pharmacokinetics and dosing of vancomycin in intravenous drug abusers: the Flor-IvDA trial

Primary Author: Varun Vohra, Holmes Regional Medical Center, FL; **Email:** varun.vohra@health-first.org

Additional Author (s):
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Purpose: Renewed interest in vancomycin in the intravenous drug abuse (IVDA) population has warranted a thorough investigation into the pharmacokinetics and potential need for more aggressive dosing requirements. Despite the paucity of available literature on the subject, studies have reported increased vancomycin clearance thereby necessitating adjusted dosing requirements to achieve and maintain consistent therapeutic concentrations in this patient population. The primary outcome of this study is to determine whether patients with active or reported history of IVDA require clinically significant differences in vancomycin dosing compared to non-IVDA.

Methods: This study was approved by the institutional Ethics Committee and consisted of a retrospective chart review from September 1, 2015 through September 1, 2016. Patients were identified using a manual chart review of all adult patients 18 years or older who received IV vancomycin with at least one serum trough level obtained during this time period. A 2:1 case-control study was performed evaluating patients with documentation of physician-confirmed IVDA and non-IVDA. Exclusion criteria consisted of patients with unstable renal function, defined as a serum creatinine (SCr) increase of 0.3 mg/dL or more in 24 hours, and creatinine clearance (CrCl) less than 30 ml/min. The following data was collected: patient age, height, weight, gender, renal function, doses of vancomycin administered and dosing intervals, serum vancomycin levels, indication for therapy and the offending agents, if specified. As a result of more observed aggressive dosing regimens, the frequency of nephrotoxicity, defined as an

increase in SCr 0.5 mg/dL or greater than 50% from baseline in 48 hours, was also assessed. All data will be collected without patient identifiers and maintained encrypted and confidential.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-116

Poster Title: Implementation of a pharmacy-driven protocol to discontinue proton pump inhibitors in patients without a clinically appropriate indication.

Primary Author: Brittany Grant, Holmes Regional Medical Center, FL; **Email:** brittany.grant@health-first.org

Additional Author (s):
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Purpose: Proton pump inhibitors (PPI's) are widely prescribed in the hospital setting, often times without an appropriate indication for use. The use of these agents does not come without consequences; there is a 3-fold increased risk of Clostridium difficile infection with PPI use, as well as an increased risk of pneumonia. A pharmacy-driven protocol was implemented at our institution in order to decrease the unnecessary utilization of PPI's. The purpose of this study is to assess the appropriate use of these medications before and after implementation of the protocol.

Methods: A retrospective chart review will be conducted before and after implementation of this pharmacy-driven protocol, with 150 patients included in each group. Patients 18 years of age and older who are admitted into the hospital and received more than one dose of pantoprazole will be included in this study, utilizing data from a one-month time period before and after implementation of the protocol. This study was reviewed and approved by our Ethics Committee. The indication for use will be assessed in all patients. Appropriate conditions for use include the following: duodenal or gastric ulcer, gastroesophageal reflux disease, Barrett's Esophagus, Zollinger Ellison Syndrome, history of a gastrointestinal bleed within 1 year, peptic ulcer disease, erosive gastritis, Helicobacter pylori infection, dual antiplatelet therapy, concomitant scheduled non-steroidal anti-inflammatory drugs, or meeting criteria for stress ulcer prophylaxis. The following data will also be collected: medication dose, route and frequency; total doses received and days of therapy; development of C. difficile infection or pneumonia; and medication continuation upon discharge. In addition, the post-implementation

group will be assessed for appropriate discontinuation by pharmacy when an appropriate indication is not documented. A pharmacist may discontinue use of these medications in patients not meeting the above criteria, unless it is a patient's home medication as documented on admission medication reconciliation, in which the physician will be contacted to consider discontinuation.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-117

Poster Title: Impact of Pharmacist-conducted Discharge Counseling on Readmissions of Patients with Chronic Obstructive Pulmonary Disease

Primary Author: Steffi Stephen, Holy Cross Hospital, FL; **Email:** ss1820@nova.edu

Additional Author (s):
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Purpose: Since October 2012, the Hospital Readmission Reduction Program requires CMS to reduce payments to hospitals with excess readmissions. Patients admitted for Chronic Obstructive Pulmonary Disease (COPD) have had the most readmissions in Holy Cross Hospital, a non-profit community teaching hospital that is located in Fort Lauderdale, Florida. The objective of this study is to determine if pharmacists can reduce the percentage of COPD admissions that were readmitted within 30 days in a non-profit community teaching hospital through pharmacy conducted discharge counseling.

Methods: This study will compare the 30-day all cause readmission rate for COPD patients receiving pharmacist discharge counseling to the historical readmission rate of COPD patients prior to initiation of pharmacist discharge counseling. Before patients are discharged, the pharmacist will collect information from the patients. This includes: demographics, COPD medical history, smoking status, chronic oxygen therapy status, and a COPD patient knowledge survey to be completed by the patient. The patient will then be given education on their COPD disease state, information about their COPD medications prescribed upon discharge, and administration technique for their inhalers. Discharge counseling will be tailored to each patient based on identified knowledge gaps or deficiencies (smoking cessation, inhaler technique, side effect management, disease education, etc.) Two days after discharge, the patient will receive a follow-up phone call by the pharmacy resident to see if they made an appointment with a physician for COPD care, if they received their COPD medications, and if they are using proper inhaler technique. At the end of the study, the average number of COPD readmissions per month will be calculated and compared to historical data using the Chi-squared test.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 9-118

Poster Title: Assessing the adherence of the American Pain Society's (APS) Post-Operative Pain Management Guidelines in exploratory laparotomy surgery patients at a community hospital

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Purpose: This study will assess provider adherence of two recommendations from the 2016 post-operative pain management recommendations of the American Pain Society, specifically, recommendations number 14 and 15: 1) Provision of acetaminophen and/or nonsteroidal anti-inflammatory drugs (NSAIDs) as part of multimodal post-surgical analgesia, and 2) Ensuring that either a stool softener or laxative are prescribed to patients for the prevention of opioid-induced constipation.

Methods: This retrospective, single center, observational study, will use chart reviews of patients who underwent an exploratory laparotomy procedure from January 1, 2016 to June 30, 2016. Exclusion criteria are: Age younger than 18 years and patients who had contradictions to NSAIDs and APAP.
The following data will be collected: medical record number, age, gender, date of admission, presence or absence of orders for opioids, acetaminophen, and/or NSAIDs, and the number of doses administered. Outcome measures will be: 1) Proportion of charts with both opioid and APAP or NSAIDS ordered; 2) The proportion of days out of the total length of stay in which NSAIDs and APAP were administered concurrently with opioids; the proportion of patients who also received a stool softener or laxative while they were on opioids.

Results: N/A

Conclusion: N/A

Submission Category: Outcomes Research

Submission Type: Research-in-Progress

Session-Board Number: 9-119

Poster Title: Clinical institute withdrawal assessment for alcohol-revised protocol implementation in a

community hospital

Primary Author: Edlyn Hwang, Indian River Medical Center, FL; **Email:** edlyn.hwang@irmc.cc

Additional Author (s):
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Purpose: Nationally, alcohol use is present in 40% of ED visits, and 8% of them experience alcohol withdrawal syndrome (AWS). AWS treatment is mainly benzodiazepines (BZD), where dosing should be guided to provide safe and effective treatment. The Clinical Institute Withdrawal Assessment for Alcohol-revised (CIWA-Ar) assessment is used to determine when to administer BZDs; however, dosing protocols vary amongst institutions. Recently, Indian River Medical Center updated their dosing protocol to reduce its complexity and improve adherence. The aim of the study is to evaluate a quality improvement initiative and determine the safety and
efficacy of the new protocol.

Methods: At the institution, Indian River Medical Center, there will be a change in the CIWAAr based alcohol withdrawal protocol in October 2016. Data results would be obtained through retrospective chart review through the electronic medical record system. The following data will
be collected: patient age, gender, race, past medical history, social history, home medications, length of stay, number of cases transferred to the intensive care unit (ICU), number of seizures, duration of BZD, total cumulative dose of BZD, and daily dose of BZD. All data will be recorded without patient identifiers and maintained confidentially. Patients admitted with documented alcohol withdrawal symptoms or alcohol-related diagnoses and CIWA-Ar protocol ordered during January 2016 to March 2016 (pre-protocol) and to January 2017 to March 2017 (post-protocol). Exclusion criteria include any prior conditions that would interfere with the treatment of alcohol withdrawal, such as hypersensitivity to BZD and benzyl alcohol.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-120

Poster Title: Comparison of efficacy and cost-effectiveness of filgrastim, tbo-filgrastim, and filgrastim-sndz in patients with cancer receiving myelosuppressive chemotherapy and patients with severe chronic neutropenia

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Additional Author (s):
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Purpose: Colony-stimulating factors such as filgrastim, tbo-filgrastim, and filgrastim-sndz act on hematopoietic cells and stimulate proliferation, differentiation, and some endcell functional activation. These medications are important for patients who are myelosuppressed or are experiencing febrile neutropenia. The objective of this study is to compare the efficacy and cost-effectiveness of filgrastim, tbo-filgrastim, and filgrastim-sndz.

Methods: This study will be submitted to the Institutional Review Board for approval. Indian River Medical Center (IRMC) used filgrastim and tbo-filgrastim over different twoyear spans in the past and is currently using filgrastim-sndz. The electronic medical record system will be used to identify patients who were administered filgrastim, tbofilgrastim, and filgrastim-sndz for myelosuppressive chemotherapy and severe chronic neutropenia. The following data will be collected: patient age, gender, ethnicity, white blood cell trends, absolute neutrophil count trends, IV anti-infective use, incidence of bone pain, incidence of nausea, length of stay, and hospital costs. Six months of utilization data will be collected and reviewed for each of filgrastim, tbo-filgrastim, and filgrastim-sndz. The data from the three medications will be organized and compared using Microsoft Excel to find statistics showing how they compare on efficacy and costeffectiveness.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-121

Poster Title: Costs associated with continuous naloxone infusion in pediatric patients receiving continuous or patient-controlled analgesia opioid therapy

Primary Author: Meghan Roddy, Johns Hopkins All Children's Hospital, FL; **Email:** meghan.roddy90@gmail.com

Additional Author (s):
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Emi Onuki

Purpose: Opioid therapy in pediatric patients is often complicated by side effects: nausea, vomiting, constipation and pruritus. Previous studies have examined the effectiveness of low-dose continuous naloxone infusion to mitigate opioid-induced pruritus while preserving adequate pain control. Currently, inpatients initiated on continuous or patient-controlled analgesia (PCA) opioid therapy consistently receive empiric, concurrent low-dose continuous naloxone infusions resulting in significant costs incurred to the institution. The purpose of this medication-use evaluation was to assess the frequency of inefficiencies associated with and other attributable costs to the use of low-dose continuous naloxone.

Methods: A retrospective medication-use evaluation was conducted for low-dose continuous naloxone infusions in patients on continuous or PCA opioid therapy over the second and third quarters of 2016. The electronic medical record was utilized to identify patients who received continuous naloxone infusions. Data collected included but were not limited to: patient demographics, service/provider, opioid used and start/stop time, duration of naloxone infusion, dose titrations, unused naloxone quantities dispensed/wasted and use of adjunct medications. Patients were excluded for indications of respiratory depression and other opioid toxicity management.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-122

Poster Title: Evaluation of intravenous allopurinol use in a pediatric hospital

Primary Author: Haley Grunwald, Johns Hopkins All Children's Hospital, FL; **Email:** hgrunwa1@jhmi.edu

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Purpose: Tumor lysis syndrome (TLS) is a life-threatening oncological emergency most commonly seen in tumors with a high proliferative rate, large tumor burden, or high sensitivity to cytotoxic therapy. Appropriate prophylactic measures and treatment of TLS is necessary to reduce the risk of serious and potentially fatal complications. Allopurinol, a xanthine analog available in oral and intravenous (IV) formulations, is used to prevent and treat TLS. Given the recent cost increase of the IV product, this medication use evaluation was designed to assess current usage, create appropriate usage criteria, and evaluate the potential cost savings of implementing the usage criteria.

Methods: The electronic medical records of 31 patients who received allopurinol IV between July 1, 2014 and June 30, 2016 will be reviewed. The following demographic information will be collected: patient age, gender, height, weight, and tumor type. Additional data to be collected includes: dose strength, dose frequency, total number of doses received, NPO status, WBC count, uric acid, lactic dehydrogenase, basic metabolic panel, and urine output prior to the start of therapy. All data will be analyzed to determine if patients meet the proposed criteria for use. Criteria for use will be defined as patients unable to receive rasburicase or patients at intermediate or high risk of developing TLS who are NPO or unable to tolerate oral allopurinol.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-123

Poster Title: Compliance with antimicrobial restriction criteria at a pediatric institution: a medication usage evaluation

Primary Author: Talia Papiro, Johns Hopkins All Children's Hospital, FL; **Email:** tpapiro1@jhmi.edu

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Purpose: Antimicrobial restriction is an effective strategy for antimicrobial stewardship. Antimicrobial agents with restrictive criteria include vancomycin, ciprofloxacin, and levofloxacin. Implementation of restrictive criteria for antimicrobials reduces use of inappropriate antibiotics and leads to significant cost savings. The impact of pharmacist involvement in monitoring prescriber compliance to restrictive criteria is unknown. This medication usage evaluation was developed to assess utilization of restricted antimicrobials and to evaluate pharmacist impact on compliance with restriction criteria at a pediatric institution.

Methods: Patients who received more than 48 hours of therapy with vancomycin, ciprofloxacin, or levofloxacin from January 1, 2016 through June 30, 2016 will be included for analysis. The following data will be collected: antimicrobial agent, route of administration, patient care unit, microbiology, and indication for use. To ensure compliance with restriction criteria, documentation by pharmacy, infectious diseases, and antimicrobial stewardship will be reviewed. Data will be analyzed for overall utilization and compliance with antimicrobial restriction criteria. Results will be presented to the antimicrobial stewardship, pharmacy and therapeutics, and medical executive committees.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-124

Poster Title: Evaluation of Initial Fluid Resuscitation in Critically Ill Septic Patients

Primary Author: Brittany Petrosky, Lakeland Regional Health, FL; **Email:** brittaby22@gmail.com

Additional Author (s):
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Purpose: Sepsis is a severe inflammatory response to infection, frequently associated with hypovolemia and vasodilation. Affecting millions annually and increasing in incidence, mortality is approximately one in four. Timeliness of appropriate therapy after initial identification influences patient outcomes. The purpose of this evaluation is to assess the utilization and timing of initial fluid resuscitation in critically ill septic patients. Primary outcomes include time from Sepsis Alert to initiation of fluid administration and time from fluid initiation to completion of resuscitation. Secondary outcomes include primary outcomes stratified to location at time of alert and amount of fluid administered within six hours.

Methods: This evaluation is approved by the Institutional Review Board. Patients admitted and discharged between June 1, 2014 and June 30, 2016 will be screened in reverse chronologic order from a report of all patients with a Sepsis Alert. Inclusion criteria include adult patients (> 18 years) with an admission order or transfer to the intensive care unit (ICU) for presumed sepsis within six hours of the Sepsis Alert. Exclusion criteria include trauma patients, pregnant or immediately postpartum women, and location in an ICU at the time of Sepsis Alert. A data tool was created to aid with collection and documentation of baseline characteristics including: basic demographics (age, gender, and weight), location at time of Sepsis Alert (ED or acute care floor), requirement of vasopressor(s), fluid administered (crystalloid type and bolus amount per hour for initial six hours after sepsis identification), and fluid timing (time from Sepsis Alert to fluid initiation and time from initiation to completion of resuscitation fluids). Descriptive statistics will be used to analyze primary and secondary outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-125

Poster Title: Evaluation of the management of pulmonary embolism in the emergency department

Primary Author: Somer Harvey, Lakeland Regional Health, FL; **Email:** somer.harvey@mylrh.org

Additional Author (s):

Purpose: Acute pulmonary embolism (PE) affects approximately 300,000 patients in the United States each year and is divided into three types: massive, submassive, and low-risk. The 2016 CHEST Guidelines provide recommendations for anticoagulation, thrombolytics, and catheter embolectomy specific for each of the PE types and risk of bleeding. Although the guidelines do not provide recommendations on timing, earlier treatment has been associated with improved outcomes. The goal of this medication use evaluation is to describe the current acute management of pulmonary embolism including anticoagulation, thrombolysis, and catheter embolectomy in our emergency department.

Methods: This single center, retrospective, cohort evaluation has been approved by the Institutional Review Board. Patients with a discharge diagnosis of pulmonary embolism will be consecutively screened in reverse chronological order. Patients who expired in the emergency department will be excluded. The following data will be collected: age, gender, weight, pertinent past medical history, vital signs, laboratory markers, length of stay, type of PE, method of PE diagnosis, time to therapy, dosing of anticoagulants and thrombolytics, and indication for thrombolytics and catheter embolectomy. Indications for thrombolytics and catheter embolectomy will be determined in accordance with recommendations from the 2016 CHEST Guidelines. A goal of 30 patients with each of the three types of PE will be targeted, for a total of 90 patients. Descriptive statistics will be used to report the population characteristics and to evaluate therapy.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-126

Poster Title: Re-evaluation of total parenteral nutrition utilization at a tertiary care hospital

Primary Author: Nathan Greenfield, Lakeland Regional Health, FL; **Email:** nathan.greenfield@mylrh.org

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Purpose: In December 2013, total parenteral nutrition (TPN) utilization at Lakeland Regional Health (LRH) was evaluated. Based on the American Society for Parenteral and Enteral Nutrition (ASPEN) guidelines, it was determined that 50% of patients were inappropriately initiated on TPN. Lack of baseline protein-calorie malnutrition was found to be the primary cause. Subsequently, an algorithm for TPN use was developed and educational inservices were provided to dietitians, nurses, pharmacists, and physicians. The primary objective of this study is to re-evaluate the utilization of TPN in accordance with current ASPEN guidelines and the LRH algorithm for TPN initiation.

Methods: This retrospective chart review was approved by the Institutional Review Board. Patients 18 years of age and older who were admitted and discharged between January 1st and June 30th 2016 and initiated on TPN will be included. Patients will be excluded if admitted on chronic TPN. Data collection will include: age, gender, indication for TPN, hospital day of initiation, whether it was initiated in the ICU, and duration of TPN. The primary outcomes include proportion of patients with appropriate indication and timing of TPN based on LRH protocol. Appropriate TPN indications include: enteral nutrition intolerance or contraindication, severe malnutrition, and major upper GI surgery. Appropriate timing is defined as initiation after seven days of being unable to meet at least 60% of energy or protein needs. Secondary outcomes include the primary outcome stratified based on initiation in the ICU compared to the acute care floor as well as duration of TPN therapy.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-127

Poster Title: Timing of Antibiotic Administration in Critically Ill Septic Patients

Primary Author: Kelsey Lubbers, Lakeland Regional Health, FL; **Email:** kelsey.lubbers@mylrh.org

Additional Author (s):
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Kayla Montgomery

Purpose: Sepsis is the primary cause of death related to infection. Literature demonstrates as each hour passes between recognition of sepsis-related hypotension and administration of effective antimicrobials, a patient's survival to discharge decreases by 12%. The primary objective will evaluate antimicrobial administration for diagnosis of sepsis, severe sepsis, or septic shock in accordance with identified evidence-based criteria. The secondary objective is to determine the delay in antimicrobial administration, if present, and to identify areas for improvement in clinical practice.

Methods: This is an Institution Review Board approved single center, retrospective, cohort evaluation at Lakeland Regional Health. Patients admitted and discharged between June 1, 2014 and June 30, 2016 will be screened for inclusion in reverse chronological order. Up to 100 adult patients with a diagnosis of sepsis, severe sepsis, or septic shock admitted or transferred to the ICU within six hours of sepsis identification will be included. Patients will be excluded for the following reasons, pregnancy, trauma, and sepsis alert triggered in the ICU. The outcomes will be analyzed and reported using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-128

Poster Title: Evaluation of N-acetylcysteine Use for Acetaminophen Poisoning

Primary Author: Antonia Fawaz, Lakeland Regional Health, FL; **Email:** antonia.fawaz@mylrh.org

Additional Author (s):
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Purpose: Acetaminophen (APAP) is one of the most commonly used medications for pain and fever. The antidote of choice for treating an APAP poisoning is N-acetylcysteine (NAC). APAP poisonings account for approximately 23,000 courses of NAC given annually. Lakeland Regional Health (LRH) utilizes the FDA approved dosing regimen for NAC as an established protocol in the Emergency Department for APAP overdose. However, no protocol currently exists to guide continued monitoring and NAC administration for admitted patients. The purpose of this evaluation is to describe NAC use in APAP overdose at LRH and identify patients eligible for early discontinuation of NAC therapy.

Methods: This single center, retrospective cohort evaluation has been approved by the Institutional Review Board. Informed consent has been waived. Patients will be identified from a usage report of intravenous and oral NAC. Patients admitted and discharged between January 1, 2012 and June 30, 2016 will be screened in reverse chronological order until 100 patients are included. Patients will be included if they received NAC for suspected or proven acute or chronic APAP overdose. Those patients presenting greater than 8 hours after acute ingestion will be excluded. All data will be collected from the hospital electronic medical record database and de-identified to protect patient privacy. Primary outcomes include proportion of patients eligible for early discontinuation of NAC and time from NAC initiation to meeting eligibility criteria for early discontinuation. Secondary outcomes include common causes for continuing therapy beyond a pre-specified time frame, common causes for discontinuing therapy before a pre-specified time frame, and eligibility for oral NAC in those receiving intravenous therapy. Descriptive statistics will be utilized to report the results of primary and secondary outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-129

Poster Title: Evaluation of the safety and efficacy of fluoroquinolones use at a teaching hospital

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Purpose: Fluoroquinolones are utilized as first-line agents in different types of infections due to their broad-spectrum of activity and convenient dosing regimens. However, the overutilization of this antimicrobial class has increased the incidence of resistance, adverse effects, and therapeutic failures. The objective of this study is to evaluate the utilization of fluoroquinolones at a teaching hospital.

Methods: A retrospective review was conducted to evaluate the use of the fluoroquinolones. This study was approved by the appropriate committee of the hospital. The evaluation included patient demographics, appropriateness of therapy, dosing, concurrent therapies, and adverse events during a period of three months. Currently, the hospitals does not have an active antimicrobial stewardship program and there are no restrictions or specific guidelines on fluoroquinolone use. Clinical pharmacist are assigned to make antibiotic recommendations regarding appropriate dosing, identified drug interaction, and adverse reactions. The results of this evaluation will identify strategies to optimize therapies, implement an antimicrobial stewardship team with the focus of de-escalation of therapy, and improve patient outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-130

Poster Title: Daptomycin utilization in a multicenter community healthcare system for the treatment of gram-positive infections

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Purpose: Daptomycin, a cyclic lipopeptide antimicrobial agent, has become a popular treatment option for resistant gram positive infections, including endocarditis, bone and joint, and skin and skin structure infections. Compared to alternative agents with similar spectra of antimicrobial activity, daptomycin is a substantial drug expenditure for hospitals and health systems. The aim of this drug use evaluation is to clarify the current daptomycin prescribing patterns within the Lee Health system's acute care hospitals, in order to provide a basis for guiding clinicians in choosing the most appropriate therapy for patients presenting with complicated or resistant gram positive infections.

Methods: This retrospective chart review will include patients receiving daptomycin for any indication within Lee Health's four acute care hospitals. A total of 200 patients, 50 from each hospital, will be included. Patients who are younger than 18 years of age, or who received fewer than 3 doses of daptomycin, will be excluded. Data collected on each patient will include length of stay, age, sex, weight, creatinine clearance, indication for daptomycin, daptomycin dose, ordering physician's service, presence of infectious diseases service consult, vancomycin allergy and reaction if applicable, rationale for switching from other gram positive antibiotic therapy to daptomycin if applicable, previous and concomitant antibiotics, bacterial culture results, minimum inhibitory concentration (MIC) of vancomycin for cultured Enterococcus or Staphylococcus, length of daptomycin therapy, opportunities for streamlining antibiotic therapy based on cultures and any streamlining actions taken, creatinine phosphokinase (CPK) levels at initiation and end of daptomycin therapy, and overall clinical success or failure with daptomycin. Statistics for each observational data measure will be descriptive in nature only.

Results: Not applicable

Conclusion: Not applicable

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-131

Poster Title: Utilization of dexmedetomidine in critically ill patients in a community health-system

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Purpose: Sedation with dexmedetomidine allows patients to be more arousable without the risk of respiratory depression. Current FDA-approved indications for dexmedetomidine include: sedation of non-intubated patients prior to and during surgical or other procedures and sedation of mechanically ventilated intensive care unit (ICU) patients for duration of less than 24 hours. In practice, dexmedetomidine use extends beyond these FDA-approved indications. The purpose of this medication use evaluation is to assess if dexmedetomidine is being utilized appropriately at our institution for the indications of sedation, alcohol withdrawal syndrome (AWS) and perioperative therapy in cardiac surgery.

Methods: A retrospective chart review will be conducted in patients 18 years and older, who were admitted to any of the ICUs within a community health-system and received dexmedetomidine for at least 4 hours in February and March of 2015 and 2016. The following data will be collected: demographics, ICU location, specialty group, indication for dexmedetomidine per chart documentation, duration of dexmedetomidine, administration of dexmedetomidine bolus, dexmedetomidine dosing, Richmond Agitation-Sedation Scale (RASS) and Clinical Institute Withdrawal Assessment for Alcohol (CIWA) scores achieved during dexmedetomidine use as applicable, presence and duration of other sedation infusions (propofol, benzodiazepines, opioids), presence of a neuromuscular blocker infusion during dexmedetomidine use. The reviewers will classify dexmedetomidine use as appropriate if the following criteria is met: use for sedation of mechanically ventilated patients for up to 5 days with a maximum dose of 1.5 mcg/kg/hr; use for AWS for up to 5 days with a maximum dose of 1.5 mcg/kg/hr and concomitant use of benzodiazepines as indicated per AWS protocol; use as a perioperative adjunct after cardiac surgery for a duration of 24 hours or less. The

appropriateness of dexmedetomidine use will be compared between the 2015 and 2016 groups.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-132

Poster Title: Utilization analysis of the pneumococcal vaccine in a multicenter community healthcare system

Primary Author: Christina Martin, Lee Health, FL; **Email:** christina.martin@leememorial.org

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Purpose: The CDC approximates one million U.S. adults are hospitalized with pneumococcal disease each year. Although many different organisms can cause pneumonia, the pneumococcal vaccinations target multiple serotypes of the most common bacterial cause of pneumonia, Streptococcus pneumoniae. In 2015 the CDC expanded the approved indications of the 13-valent pneumococcal conjugate vaccine (PCV13) to include high-risk adults age 19-49, increasing the targeted population for the prevention of pneumococcal disease in the community. The objective of this study is to determine if the ordering and administration of the pneumococcal vaccines within our health system are in accordance with recommended guidelines.

Methods: A retrospective chart review was performed at our multi-centered acute care community health system to identify adult patients admitted between November 2015 and April 2016 eligible to receive either PCV13 or PPSV23. A list including patients age 19-64 who met high-risk criteria and all patients over age 65 was generated using our electronic medical record system (Epic). One hundred patients from each group were randomly selected for inclusion. Once selected, the electronic medical record was reviewed to determine if the patient met Lee Health, and accordingly, CDC inclusion and/or exclusion criteria to receive either PCV13 or PPSV23 based on their age, vaccination history, and past medical history. Data collected included age, sex, admission site, length of stay, high-risk factor for those 19-64, vaccine duplication or omission, readmission for pneumonia or COPD within 6 months, and previous outpatient clinic visit within the previous 6 months. Patients were excluded from the study if they were under age 19, pregnant, missing data points, receiving chemotherapy, refused vaccination when indicated, had a vaccine allergy, bone marrow transplant within the past 12 months, previously immunized, or had an organ transplant during admission.

Opportunities for outpatient pneumococcal vaccination in the six months preceding admission were assessed by reviewing patient chart notes. This study was approved by our Institutional Review Committee. Descriptive statistics were used for data analysis.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 9-133

Poster Title: Treatment of acute bacterial skin and skin structure infections (ABSSSI) in the outpatient setting: clinical and economic outcomes from a real-world multi-center study of oritavancin

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Purpose: At a mean admission cost of 8000 dollars per visit, significant interest exists to avoid unnecessary admission for the treatment of ABSSSIs. The mean cost of a seven day course of daptomycin in the outpatient setting is 4,150 dollars. Oritavancin is a once-only dose intravenous (IV) antibiotic which may allow avoidance of hospital admission and reduce costs, but little is known about clinical and economic outcomes in the outpatient setting. The purpose of this study was to evaluate the clinical and economic outcomes of patients treated with oritavancin in the hospital outpatient infusion setting.

Methods: This was an institutional review board approved multi-center retrospective chart review conducted at 6 US hospitals. Patients 18 years of age or older who received outpatient oritavancin from 1/1/2015 to 1/31/2016 were included if they had not been discharged from the inpatient setting within the previous 24 hours. Clinical success (cure or improved) was assessed at 5-30 days. Economic evaluation encompassed medication cost and healthcare resource utilization (HRU), including subsequent hospital admission, antimicrobials and antimicrobial administration, diagnostic testing and surgical procedures. Economic data was collected from index diagnosis to 30 days post oritavancin administration.

Results: 115 patients met all inclusion criteria. The mean age was 59.7 and 64 percent were female. Overall 93 percent of patients had at least 1 comorbidity; most common were hypertension (53 percent), diabetes (22.6 percent) and hyperlipidemia (20.9 percent). Mean BMI was 36.1 kilogram per square meter. 60 percent of patients had prior oral or IV antibiotic

treatment. All patients returned home after treatment. Success rate was 99.1 percent, with 1 patient requiring additional antibiotics due to inadequate treatment response. A total of seven (6.1 percent) patients were admitted to a hospital within 30 days of outpatient treatment, of which three (2.6 percent) were infection-related). No patient required discontinuation of therapy due to adverse event. Mean cost of outpatient administration of oritavancin was estimated to be 3,162 dollars.

Conclusion: Results of this study suggest that outpatient treatment with oritavancin is highly safe and effective. Economic data collected during this study indicate that oritavancin treatment involves fewer resources and is less expensive than inpatient or alternative outpatient treatments for ABSSSI. Treatment with oritavancin in the outpatient infusion setting may allow for effective treatment of ABSSSI without hospital admission, peripherally inserted central catheter line utilization or multiple daily visits in the infusion or home-health setting for patients requiring intravenous antimicrobial therapy.

Submission Category: Preceptor Skills

Submission Type: Research-in-Progress

Session-Board Number: 9-134

Poster Title: Implementation of a preceptor development program in a community health system

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Purpose: Teaching is an important part of being a pharmacist. Throughout the doctor of pharmacy curriculum, students are given opportunities to learn from practicing pharmacists who serve as preceptors. However, many pharmacists have not received formal education in preceptorship. While it may not be necessary for pharmacists to be trained as teachers, teaching principles can be applied in any learning environment, including experiential rotations. This project involves the design and implementation of a structured preceptor development program for pharmacists to improve their preceptor skills.

Methods: This project will be submitted to the institutional review board for approval. Content will be provided through three modules that each include readings, videos, and supplemental activities. Each module will be designed to require approximately one hour to complete, but assumes completion will be done over small blocks of time. This design will accommodate the pharmacists involved in direct patient care by not impeding workflow. Each module will focus on a core area of preceptorship. Pharmacists will access the program through a third-party website that provides continuing education, a platform that is already in place for the delivery of required institution-specific continuing education. Introduction to the program will be provided via in-services that include discussions about the program, why it is being undertaken, potential benefits to be gained, and requirements for completion. The project will include two assessments. The first will occur prior to beginning and assess baseline characteristics. Results will be utilized to help tailor content to pharmacist needs and interests. The second will occur after completion and assess perception of the program. Results will be analyzed to help improve future preceptor development initiatives. For both assessments, participants will be surveyed using closed-ended multiple choice and matrix questions, as well as open-ended free

response questions to capture additional relevant information. Data collection, analysis, and summary will be done through SurveyMonkey.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-135

Poster Title: Retrospective evaluation of vasopressor use in patients sedated with continuous infusion propofol

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Purpose: Propofol is a widely used sedative in intensive care units (ICU) due to its pharmacokinetics and ease of titrating. While propofol use is common, one of its major adverse effects is hypotension. These effects can be so severe that vasopressors become necessary for the survival of the patient. This retrospective review will evaluate the use of propofol in patients in the ICU and emergency room to determine correlations between the average dose of propofol requiring vasopressor initiation. Patient-specific demographics will be evaluated to determine any significant risk factors increasing the incidence of propofol-induced hypotension requiring the use of vasopressors.

Methods: A retrospective, cohort study will be conducted at Martin Health System. Patients must meet the inclusion criteria of sepsis, severe sepsis, or septic shock diagnosis, and have been maintained on continuous infusion propofol for a minimum of 12 hours. Exclusion criteria are patients less than 18 years of age, patients who were on sedative (benzodiazepines, ketamine) infusions, or analgesic (fentanyl, morphine) infusions simultaneously with propofol. The patient list will be generated by completing a report of patients with specific ICD-9 codes for sepsis, severe sepsis, and septic shock, and cross referenced with a report of propofol continuous infusion use within a four year time period. Patient demographics, comorbidities, prior to admission prescriptions for benzodiazepines, and other patient-specific factors will be collected. The primary outcome will be the incidence of hypotension requiring vasopressor initiation. Secondary outcomes will include average propofol dose, average duration of infusion, hospital and ICU lengths of stay. Mean medication doses, length of stays, and duration of vasopressor therapy will be compared using Student's t-tests. Nominal data will be compared using Pearson's chi-square. P-values less than 0.05 will be considered statistically significant. Statistical analysis will be completed utilizing SPSS version 12.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-136

Poster Title: Clinical impact of a rapid diagnostic blood culture identification panel in the treatment of bacteremia in a community health system

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Purpose: Rapid diagnostic tests are quickly becoming a critical tool for Antibiotic Stewardship Programs (ASPs) to design quick and efficacious antibiotic regimens to better serve their respective patient populations. This single center study will focus on the use of blood culture identification panels (BCID) in order to streamline empiric therapy for those patients identified as having bacteremia. In turn, data from this study will be analyzed in order to determine the effects of rapid diagnostic tests on hospital stay, readmission rates, mortality, and time to optimal therapy.

Methods: Patients included in this study are those with confirmed cases of bacteremia. Through the use of a multiplex polymerase chain reaction (PCR) system, organism identification will be obtained in a mere fraction of the time utilized by traditional culturing methodologies. Results will then be conveyed to point of care physicians and infectious disease pharmacists directly in order to decrease the time to optimum antibiotic therapy. This study will focus on data pre and post implementation of the institution's rapid diagnostic device and the relevant protocols designed to take advantage of the expedited cultures and sensitivities. The study population prior to the implementation of the rapid diagnostic device will serve as the study control. The primary outcome of this study is to measure the time needed to obtain streamlined antibiotic therapy; this will be measured in the time in hours needed for empiric therapy to be changed to optimal therapy. Secondary outcomes will assess for changes in hospital stay, mortality, hospital readmission, and the costs associated with treating patients with bacteremia.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-137

Poster Title: Evaluation of a computerized physician order entry system on selecting guidelines-directed adult empiric antibiotic therapy for skin and soft tissue infections

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Additional Author (s):
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Purpose: Memorial Healthcare System developed a computerized adult empiric antibiotic therapy order set for providers to select guidelines supported antimicrobials. The order set promotes the selection of optimal antimicrobial drug selection, dose, duration of therapy, and route of administration based on a patient's diagnosis, risk factors for resistance and admitting presentation. This order set, however, continues to be under-utilized. This study evaluates the difference in prescribing trends for adult patients admitted with skin and soft tissue infections after the implementation of the order set has been completed when compared to the same time frame the previous year.

Methods: A retrospective electronic health records (EHR) review was conducted between October 2014 and February 2015 identifying patients admitted for skin and soft tissue infections at an acute care community hospital. The primary intervention will be hospital wide in-services for healthcare providers on the adult empiric antibiotic therapy order set, which will be conducted over a 14-day period prior to data collection. After the education period, the records of patients admitted for skin and soft tissue infections will be prospectively evaluated on the compliance of the order set. Data that will be collected includes but not limited to: demographic variables, initial antibiotic selected, dose, duration of therapy, route of administration, length of stay, and prior antibiotic use. The results will be compared to data collected from a retrospective chart review of the same patient population within the same time frame one year prior to the intervention. The primary endpoint is the appropriate selection of empiric antibiotic based on the order set. The secondary endpoints are length of

stay, antibiotic defined daily doses per 1000 patient days, costs of antibiotics, and readmission rates.

Results: Not Applicable

Conclusion: Not Applicable

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-138

Poster Title: Evaluation of the accuracy of a sepsis alert and the effects on readmission rates, mortality and antibiotic appropriateness

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Purpose: Severe sepsis and septic shock are responsible for significant morbidity and mortality in the United States accounting for more than 250,000 annual deaths. Early recognition, although sometimes challenging, is crucial to reduce mortality and costs. The Surviving Sepsis Campaign was created to reduce mortality by standardizing care based on data from clinical trials, however, despite the availability of evidence-based guidelines, mortality rates have increased. The objective of this quality improvement initiative is to assess the accuracy of a sepsis alert used to identify potentially septic patients, in addition to the effects on appropriateness of antibiotics, readmission rates, and mortality.

Methods: A sepsis alert is fired for further review by clinicians via the electronic health record when a patient has two abnormal vital signs (temperature above 38 °C or below 36.1 °C, HR bpm above 90, RR over 20 rpm, systolic blood pressure below 90 mmHg, and oxygen saturation below 90%). Upon further review, the clinician answers additional screening questions to detect sepsis. We will evaluate the appropriateness of antibiotics administered to patients identified as septic, and will compare outcomes, such as morbidity and mortality following implementation of this alert and prior to initiation of this alert. The time period evaluated will be 6 months for each group. Chart reviews will be performed using a standardized data collection tool. Patients with ICD-9/ICD-10 codes of sepsis will be reviewed for readmission rate, mortality, and antibiotic appropriateness (susceptibility and timing). A random retrospective analysis of 585 patients in whom the sepsis alert fired will be reviewed for presence of sepsis based on ICD-9/ICD-10 codes and appropriateness of antibiotics in order to potentially streamline the number of false positive alerts that fire. The primary outcomes to be

evaluated will be 30 day readmission rates and mortality rates for septic patients, and antibiotic appropriateness of patients in which the sepsis alert was triggered.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-139

Poster Title: Implementation of a pharmacist-driven antibiotic stewardship best practice initiative to decrease incidence of healthcare-associated Clostridium difficile infections

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Additional Author (s):
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Purpose: Clostridium difficile infection (CDI) rates are on the rise and contribute significantly to mortality and cost of care. Antibiotic exposure is the single most modifiable risk factor for developing C. difficile infections. Currently, our facility, Memorial Hospital West, does not have a consistent practice for antibiotic surveillance as recommended by the Infectious Diseases Society of America (IDSA) guidelines. The intent of this study is to utilize dedicated pharmacists to conduct antibiotic surveillance using IDSA Antibiotic Stewardship Program (ASP) guideline recommendations to optimize antibiotic therapy for patients and decrease risk for developing healthcare-associated C. difficile infections (HA-CDIs).

Methods: This study has been exempt by the Institutional Review Board. A pharmacist-driven antibiotic stewardship will be initiated at our facility. The surveillance program involves daily review of antibiotics, defined as clindamycin, fluoroquinolones, cephalosporins, carbapenems, amoxicillin and ampicillin, that are highly associated with CDIs. Pharmacists will utilize a report to identify all adults on the aforementioned high risk antibiotics for greater than or equal to two days. Patient charts will be reviewed for appropriateness of antibiotic therapy. Physicians will be contacted with interventions that meet the following criteria: streamlining antibiotic therapy, assigning a duration of therapy, discontinuing antibiotic(s) and/or proton pump inhibitors (PPIs), if appropriate. All pharmacist interventions will be documented in patient charts. The following data will be collected: patient age, gender, race, past medical history, immunosuppressive state, previous hospitalization and antibiotic exposure, prior CDI, active PPI order, antibiotic(s), indication for antibiotic(s), total days of therapy, pharmacist intervention, physician response, physician specialty and if patient developed CDI. All patient identifiers will

be de-identified and kept confidential. Primary outcome of this study is to reduce the number of HA-CDIs at our facility where number of pre and post-intervention HA-CDIs will be compared. Descriptive analysis will be used to evaluate secondary outcomes which will be number of pharmacist interventions that were accepted or rejected by physicians and total number of days on any high risk antibiotic(s).

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-140

Poster Title: Impact of an infectious disease call service on antimicrobial stewardship: A retrospective quality analysis

Primary Author: Jeana Kett, Memorial Regional Hospital, FL; **Email:** jkett@mhs.net

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Purpose: The role of pharmacists in antimicrobial stewardship programs is well documented. Pharmacists play a key role by promoting optimal use of antimicrobial agents, reducing transmission of infections, and coordinating educational seminars. The implementation of an infectious disease call service pharmacist can potentially play an integral role in the acclimation of the upcoming Joint Commission Standards for Antimicrobial Stewardship, specifically to improve optimal antibiotic use and initiation of a tracking program. The purpose of this quality analysis is to investigate the effectiveness of a pharmacist driven infectious disease call service on patient outcomes and cost avoidance related to antimicrobial prescribing practices.

Methods: A six month prospective, single center pilot study was conducted by a pharmacy resident to evaluate the interventions and outcomes of a pharmacist driven infectious disease call service. Advertisement of the service occurred with a kickoff event at the pharmacy monthly staff meeting, monthly emails, and word of mouth. The kickoff event included an introduction to the program, an infectious disease personalized Instagram frame, and flyers that were distributed to all pharmacists. The service was available from 0700-1600 Monday-Friday. The service was managed by a pharmacy resident two weeks out of the month and the Infectious Disease Clinical Coordinator for two weeks out of the month. An infectious disease clinical pharmacist was assigned to the pharmacy resident for guidance throughout the study period. A data collection sheet was maintained on a shared drive to capture documentation of the call and was updated within 24 hours of any call. The data sheet included a brief synopsis of the question/case, answer/intervention provided, time spent on call, whether intervention was accepted, and the intervention type. Intervention types were classified into the following categories: adverse effects, dosing optimization, drug interactions, de-escalation, antimicrobial

coverage, pharmacokinetic (PK) monitoring, proper utilization, and other. Analysis of results included call volume, acceptance rates, intervention types, and average time span per call to evaluate the effectiveness of a pharmacist driven infectious disease call service.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 9-141

Poster Title: Management of Sickle Cell Pain in the Emergency Department in Adult Sickle Cell Vaso-occlusive Crisis

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Purpose: Acute sickle cell vaso-occlusive crisis (VOC) is the hallmark of sickle cell disease (SCD). Pain is the most common reason for sickle cell patient admission to the Emergency Department (ED). The National Institutes of Health (NIH) expert panel suggested pain management should be prompt and individualized among patients with sickle cell disease (SCD). The objective of the study is to evaluate the current pain management in sickle cell VOCs and to identify priority areas of intervention.

Methods: This retrospective single center analysis will be conducted in a tertiary hospital in south Florida. A report of sickle cell VOC admissions will be requested and the electronic medical records will be reviewed. The current management of sickle cell VOCs involves use of intravenous "as requested" (PRN) opioids within a sickle cell order set. Outcome of current sickle cell VOC management will be evaluated and used to identify priority areas for future intervention. Data regarding demographics, pain scale, pain management, appropriate continuation of home medications such as long acting opioids and hydroxyurea will be collected retrospectively. Additionally, inpatient length of stay, pain scale reduction, and 30-day readmission rate will also be described.

Results: Research-in-progress

Conclusion: Research-in-progress

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-142

Poster Title: Effect of clinical pharmacy specialist intervention on metabolic markers in patients receiving long-acting antipsychotic injection therapy

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Purpose: Metabolic syndrome is a cluster of symptoms that increases an individual's risk of developing chronic diseases such as diabetes and cardiovascular disease. Early recognition and management of symptoms can prevent the development of these diseases. The risk for metabolic syndrome is increased in patients with severe mental illness. The purpose of this study is to assess the impact of a clinical pharmacy specialist-managed long-acting antipsychotic injection clinic on metabolic parameters, emergency room visits and hospitalizations. The clinic's primary design focus is on improving patients' overall wellness through a collaborative treatment approach.

Methods: Patients who currently receive long acting injection antipsychotic therapy by psychiatric providers at the outpatient behavioral health clinic will be referred to the pharmacist-run long acting therapy (LAT) clinic. At the first visit, the clinical pharmacy specialist will collect demographic and medical information including allergies, past medical history and current medications. The patient will have labs ordered, including fasting glucose and a lipid panel, within 1-2 weeks of the initial visit. During each visit, the patient's vitals will be taken and waist circumference will be measured. In addition, the clinical pharmacy specialist will complete an evaluation and management session. This process will include interviewing the patient and assessing the patient's understanding of their medication regimen including potential side effects and their lifestyle choices. In addition, the efficacy, response, adherence and side effects will be evaluated using validated scales. The clinical pharmacy specialist will provide education to the patient on any aspect of their medication regimen and/or lifestyle choices as

appropriate. The clinical pharmacy specialist may contact the primary care and/or psychiatric provider to make recommendations regarding the patient's medication regimen if necessary. All visits will be documented and co-signed by the patient's psychiatric provider to ensure continuity of care.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-143

Poster Title: Evaluation of fixed dose enoxaparin on safety and efficacy for venous thromboembolism (VTE) prophylaxis in acutely ill morbidly obese patients: A retrospective analysis.

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Additional Author (s):
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Carla Hawkins

Purpose: Morbid obesity, defined as body mass index (BMI) greater than 40 kg/m2, is associated with a two-fold risk of developing venous thromboembolism (VTE). Morbidly obese patients have been underrepresented in all VTE prophylaxis clinical trials. Consequently, there is limited data to assess appropriate low molecular weight heparin (LMWH) dosing for VTE prophylaxis in acutely-ill morbidly obese patients. Fixed dose LMWH may not provide ideal VTE prophylaxis in morbidly obese patients. The objectives of this study are to assess hospital acquired VTE rates and clinical outcomes of morbidly obese patients receiving enoxaparin 40 mg subcutaneously (SQ) once daily for VTE prophylaxis.

Methods: This is a retrospective chart review conducted on all morbidly obese patients admitted to a community based, 800-bed hospital from July 1, 2015 to July 1, 2016. The study will begin once institutional review board approval is received. The study population will be limited to inpatients with BMI greater than 40 kg/m2, with a length of stay greater than 48 hours, who received VTE prophylaxis with enoxaparin 40 mg SQ once daily. Exclusion criteria include renal impairment defined as creatinine clearance less than 30mL/min using Cockcroft-Gault equation adjusted for lean body weight, therapeutic anticoagulation on admission, active bleeding on admission, platelet count less than 100,000 per microliter, active cancer, known hypersensitivity to unfractionated heparin or LMWH, thrombophillic disorders, admission under trauma or surgical services and patients with VTE diagnosis on admission. The endpoints of this study include hospital acquired VTE rates and incidence of bleeding. Based on previous literature, the VTE incidence rates for prophylaxis and placebo in medically ill non-obese

patients are 5.5 and 14.9 percent, respectively. We can assume the incidence of VTE in obese patients is at least twice that of the general population. Assuming an attrition rate not to exceed 20 percent, a sample size of 200 will be required to achieve 80 percent power, with an alpha level equal to 0.05. Descriptive statistics will be used to analyze the data.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-144

Poster Title: Impact of pharmacist-facilitated multidisciplinary approach to accelerate prior authorization times for high cost specialty medications to assist in transition of care

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Purpose: The discovery of human genome mapping has paved the way to new drugs tailored to specific patient populations. The research and development process associated with these medications often leads to a higher cost. The unavailability of generics also equates to higher drug acquisition costs for these medications. Insurance companies may cover the costs of medications, but unaffordable co-payments may remain. This may result in delayed treatment or prescription abandonment. The purpose of this study is to evaluate prior authorization time, co-payment costs, and patient's access to specialty prescriptions when a pharmacist is an integral part of the prior authorization process.

Methods: Pharmacists play an integral role in treatment recommendations and disease management for cardiac patients. Cardiology-trained pharmacists in both the inpatient and outpatient setting are involved in the prior authorization process when a cardiologist have identified patients as candidates for specialty medications through the use of diagnosis specific guidelines. During admission or once discharged patients may be referred to the cardiac clinic for treatment or follow up care. During the clinic visit, the cardiologist may decide to place a patient on a medication which requires patient enrollment, consent and/or prior authorization. The cardiac clinic is a unique facility that has a cardiology-trained pharmacist in place to process prior authorizations. Information often needed to complete enrollment and /or prior authorization includes demographic information, insurance information, diagnosis, and previously trialed and failed medications. Data will be collected by utilizing monthly Epic reports. Information from these reports will identify patients newly initiated on specialty medications. Identified patients insurance information will be recorded. Other recorded

information includes time to completion of prior authorization, supplemental information required for prior authorization, co-payment, and hospital readmission. A telephone interview will be conducted with readmitted patients to identify potential obstacles to medication access and adherence. Patients unable to afford their medication will be evaluated for enrollment eligibility in patient assistance programs or foundation grant access.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-145

Poster Title: Pharmacists' evaluation of surgical site infections (SSI) and antimicrobial stewardship: A retrospective quality analysis

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Purpose: Surgical site infections (SSIs) occur in approximately 2% of all surgical procedures and account for 20% of all healthcare-associated infections (HAI). A diagnosis of a SSI extends a patient's length of stay approximately 9 days and increases healthcare costs by approximately $20,000 per admission. SSIs most often occur within 30 days of procedure between post-operative days five and ten. The primary objective of this study is to evaluate trends and risk factors for patients diagnosed with SSI within 30 days of surgery.

Methods: This study is a retrospective quality analysis of patients who developed a SSI following a surgical procedure. A list of patients classified with a SSI within 30 days following surgery will be generated from a hospital database. Parameters to be analyzed include: type of surgical procedure, antibiotic selection, timing of dose prior to procedure, completion of antibiotics within 24 hours of anesthesia end time, intra-operative re-dosing, colonization with microorganisms, age, diabetes, smoking, steroid use, malnutrition, obesity, and length of preoperative stay.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-146

Poster Title: Impact of a standardized methadone weaning protocol and withdrawal assessment tool for iatrogenic opiate withdrawal in pediatric patients

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Purpose: Pediatric patients exposed to long-term opiate infusions are at risk of developing iatrogenic opioid dependence and withdrawal symptoms, potentially increasing patient morbidity and increasing intensive care unit length of stay. Methadone is an ideal weaning agent due to its long half-life and high oral bioavailability and has been used extensively at our institution for weaning. Lack of a standardized protocol resulted in variability in methadone dose and therapy duration. The purpose of this study is to quantify the impact of a standardized methadone weaning protocol and implementation of a validated withdrawal assessment tool on weaning duration and incidence of withdrawal.

Methods: This study will be submitted to the institutional review board for approval. A standardized methadone weaning protocol was developed and implemented as an order set in the electronic health record (EHR) to maximize adherence to the protocol. This protocol was developed at a 224 bed free standing community children's hospital, for use in pediatric intensive care unit patients. Additionally, the withdrawal assessment tool (WAT-1), a validated scoring tool for evaluating iatrogenic withdrawal in pediatric patients, will be implemented to objectively assess withdrawal symptoms during methadone treatment. Patients who were exposed to morphine or fentanyl continuous infusions greater than 5 days and have no baseline neurological deficit or methadone intolerance will be included in the study population. Investigators will retrospectively review outcomes for pediatric patients who have been prescribed methadone for weaning opiate infusions pre and post protocol implementation. The outcome of the protocol will be evaluated by comparing total number of days on methadone

and number of morphine bolus doses administered for withdrawal symptoms pre and post implementation. Data will be collected by running EHR usage reports to identify patients on the methadone protocol. The following will be collected post protocol implementation and will be compared to available data prior to protocol implementation; duration of methadone exposure, administration of morphine boluses for withdrawal, WAT-1 scores and concomitant sedative administration.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-147

Poster Title: Evaluation of physician-led oral chemotherapy management within a large health-systems outpatient cancer center

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Purpose: The use of oral chemotherapy has increased over the past decade. It is estimated that more than 25 percent of the antineoplastic agents in development will be orally administered. The oral route of chemotherapy administration is desirable to patients due to ease of administration and potentially fewer office visits. However, safety issues exist, such as limited resources to monitor adherence and toxicity. The primary objective of this study is to evaluate the current practice of primarily physician-led management of oral chemotherapy based on prescribing recommendations and published guidelines and identify whether gaps in care exist that could impact patient outcomes.

Methods: This analysis is a retrospective chart review that will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who received an oral antineoplastic medication for a minimum of three consecutive months between January 1, 2015 and June 30, 2016. Prescriptions must be written by an institution-employed oncologist. Patients will be included if they are at least 18 years of age and receiving oral chemotherapy for an oncology indication. Patients will be excluded if they are younger than 18 years of age, have orders prescribed for a non-oncology indication, are a bone marrow transplant recipient, are taking hormonal therapies or medications that are part of a risk evaluation and mitigation strategies program. A report will be generated utilizing the electronic medical record system. An excel spreadsheet will be created to store de-identified information. Patient demographic information will be assessed and the following data will be collected and evaluated: indication, dosing, administration instructions, appropriate labs, frequency of

monitoring, dose adjustments, major drug interactions, toxicities, documented patient education and informed consent, and adherence to follow-up appointments. Data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 9-148

Poster Title: Retrospective evaluation of inpatient to home health care (HHC) carbapenem transition after computerized process restructure in a community hospital

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Purpose: Patients receiving meropenem, who require continued treatment at home, are switched to ertapenem for its once daily dosing convenience. A HHC criteria for patient transition is to give one dose of ertapenem while the patient is hospitalized. However, patients may receive more than one dose, especially if their discharge is held. As a result, ertapenem use has increased steadily over the past year. The clinical manager and informatics pharmacist implemented an order strategy to help avoid unnecessary ertapenem utilization. The objective of this study is to assess the impact of the newly implemented process for patients transitioning to HHC.

Methods: This process evaluation will be submitted to the institutional review board (IRB) for approval. A retrospective chart review will be performed using the electronic medical record (EMR). Patient data will be censored and will be recorded without identifiers. A data inquiry will be requested and generated for the inclusion of patients in this study. Inclusion criteria: patients 18 years and older, admitted during the second or third quarter of 2016, transitioned to HHC, who received at least one dose of ertapenem. Exclusion criteria: patients not discharged on ertapenem to HHC. The following data will be collected for each quarter: number of ertapenem patients discharged to HHC, total number of ertapenem doses administered to these patients, number of patients discharged to HHC who received more than one ertapenem dose and total number of unnecessary ertapenem doses. In addition, the number of times the new order strategy was used will be collected for the third quarter. Appropriate statistics will be used to analyze the information. For the study period the number of unnecessary ertapenem doses given before and after the implementation of the new process will be

translated to a monetary value. The primary outcome measure will be the change in ertapenem doses utilized from the second to the third quarter.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Case Report

Session-Board Number: 9-149

Poster Title: The utilization of icatibant in treating angiotensin-converting enzyme inhibitor (ACE-inhibitor) induced angioedema

Primary Author: Marie Barnicoat, n/a, FL; **Email:** mbarnico@gmail.com

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Purpose: This case series illustrates the utilization of icatibant to treat angiotensin-converting enzyme inhibitor (ACE inhibitor) induced angioedema at a community based hospital between December 2015 through November 2016.

Patient 1 is a 62 year old African-American female with a past medical history significant for hypertension, gout, and atrial fibrillation who presented with angioedema. At the time of admission she was on hypertension therapy with lisinopril/hydrochlorothiazide 20/12.5 mg daily. In the emergency room, she was given single doses of famotidine 20 mg IV, methylprednisolone 125 mg IV and diphenhydramine 50 mg IV. The patient had little improvement in her condition after one hour. She was then given a subcutaneous injection of 30mg of icatibant. A documented improvement in edema occurred 20 minutes after administration. The patient was then admitted to the intensive care unit for monitoring and was continued on oral diphenhydramine and intravenous methylprednisolone. Patient had no further documented incident or complications and was discharged from the hospital after a one day stay.

Patient 2 is a 56 year old Caucasian male with a past medical history significant for atrial fibrillation, chronic obstructive pulmonary disease, hypertension, hyperlipidemia who was transferred to our facility with suspected angioedema and/or anaphylaxis. At the time of admission, he was on hypertension therapy with lisinopril 10 mg daily. Prior to transfer, the patient received diphenhydramine 25mg IV, epinephrine 0.3mg IM, famotidine 20mg IV with mild resolution of swelling. Upon arrival to our ED, the patient received a subcutaneous injection of 30mg of icatibant and had marginal, continued improvement in swelling. Patient was admitted to our step down unit for 24 hours of monitoring. Patient had no further documented incident or complications and was discharged from the hospital after a one day stay.

Patient 3 is a 49 year old African-American female with a past medical history significant for hypertension. At the time of admission, her hypertension therapy consisted of lisinopril 20 mg daily and hydrochlorothiazide 25 mg daily. In the emergency room, she was given single doses of diphenhydramine 25 mg IV, famotidine 20 mg IV, methylprednisolone 125 mg IV, glycopyrrolate 0.2 mg IV. She was then given a subcutaneous injection of 30mg of icatibant. Patient was admitted and placed in PCU for 24 hours of monitoring and was continued on methylprednisolone 60 mg IV q 6 hours, diphenhydramine 50 mg IV q 6 hours, and famotidine 20 mg IV. Patient had no further documented incident or complications and was discharged from the hospital after a one day stay.

Patient 4 is a 53 year old African American male with a past medical history significant for hypertension and schizophrenia. Patient presented to the ED with complaint of facial and throat swelling which began a day prior to admission. Upon admission, the patient's hypertension therapy consisted of lisinopril 40 mg daily, amlodipine 5 mg daily. In the emergency room, patient received methylprednisolone 125 mg IV once, famotidine 20 mg IV, diphenhydramine 50 mg IV, hydralazine 10mg IV. Patient received icatibant 30 mg SQ which resulted in a significant relief of symptoms shortly after. Patient had no further documented incident or complications and was discharged directly from ED department after a 2 hour ED admission.

Data collection is ongoing and future utilization will be included in final case series presentation. Overall, from this evaluation the use of icatibant at our facility expedited the time of resolution of symptoms and decreased our length of stay from angiotensin-converting enzyme inhibitor (ACE inhibitor) induced angioedema compared to standard therapy.

Methods:

Results:

Conclusion:

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-150

Poster Title: Incidence of hyponatremia with the use of vasopressin in pediatric patients with shock

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Purpose: Vasopressin is used to help manage severe hypotension in patients with vasodilatory shock as adjunct therapy with catecholamines and for refractory shock. Consequently, a potential serious adverse effect of vasopressin is retention of free water followed by a decrease in serum sodium levels. Vasopressin has a low volume of distribution. Therefore, higher incidences of hyponatremia are expected in pediatric patients and underweight adults. The purpose of this study is to review the incidence of hyponatremia in pediatric patients admitted to the cardiac, neonatal, and pediatric intensive care unit (ICU) with vasodilatory shock following administration of vasopressin.

Methods: The study protocol has been approved by the Institutional Review Board. This will be a retrospective evaluation of pediatric patients who received vasopressin in an intensive care setting within a four-year timeframe. The Research Analytics and Data team at Miami Children's Research Institute will search the electronic data warehouse for patients who were diagnosed with an ICD 9 or 10 code for shock. Using the electronic medical record system, baseline characteristics of the following will be collected: age, gender, weight, and height. Serum sodium concentrations will be noted as follows: baseline, lowest level during therapy, and at 6 hours, 12 hours, and 24 hours after discontinuation of vasopressin. Serum sodium levels less than 135 mEq/L will be classified as hyponatremia, and severe hyponatremia will be classified as levels less than 130 mEq/L. Serum sodium levels before and during vasopressin therapy will be compared. The medication administration record will be reviewed to determine a relationship between incidence of hyponatremia and dose of vasopressin or length of treatment at the time of lowest sodium level. All recorded data will be de-identified to protect patient confidentiality.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-151

Poster Title: Development of transitions of care pharmacist services for high-risk medical patients in a tertiary community hospital discharge unit

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Purpose: The Centers for Medicare and Medicaid Services implemented the Hospital Readmissions Reduction Program to incentivize institutions to reduce preventable readmissions by implementing payment penalties if indexes exceed national rates. National average 30-day readmission rates for high-risk conditions, including pneumonia, heart failure, chronic obstructive pulmonary disease, and acute myocardial infarction are approximately 20%. Similar rates are observed within a large, acute care facility in South Florida. The purpose of this project is to implement a pharmacist-driven transitions of care (ToC) service in a discharge unit for high-risk patients and to improve readmission rates.

Methods: An interdisciplinary team of stakeholders, including pharmacy administration, nursing management, clinical effectiveness supervisors, and a PGY-2 ToC resident, collaborated in July 2016 to institute programs and processes to reduce preventable readmissions. High-risk Medicare beneficiary admissions were captured for fiscal year 2015 – 2016. During this time, 670 patients were admitted and 120 of those patients with the previously-specified medical conditions were readmitted with 30-days of discharge. Previous workflow involved discharging patients from various medical and surgical units throughout the hospital. Case management was the primary service who provided post-discharge telemanagement. The team of stakeholders determined that pharmacist services, including discharge medication counseling and telemanagement, were underutilized.

Results: A pharmacist-driven, interdisciplinary ToC service was developed in order to triage and coordinate high-risk patients' discharge. Health information technologies and electronic

medical record systems were developed to identify subjects at risk for readmission. In the discharge unit, subjects meet with a pharmacist who performs medication reconciliation, offers pharmacotherapeutic counseling, ensures post-discharge medication access, facilitates pill box planning, and arranges follow-up provider appointments. Verbal and written education is subject specific. Within 72 hours following discharge, the pharmacist provides telemanaged care to the subject at home. Pharmacist-driven ToC interventions continue for 30 days following discharge.

Conclusion: Project investigators and key project stakeholders established a pharmacist-driven discharge service by means of interdisciplinary collaboration. Continuous quality improvement analysis evaluates both the successes and areas for improvement of this program. With the implementation of the program, there is an expectation for high-risk readmissions to decrease. Additional interdisciplinary education is necessary for continuity of the program.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-152

Poster Title: An evaluation of the initiation and use of sacubitril/valsartan in an inpatient heart failure population: A retrospective observational study

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Purpose: Sacubitril/valsartan, an angiotensin receptor-neprilysin inhibitor, was found to be superior to enalapril in reducing the risks of death and hospitalization for heart failure in the PARADIGM-HF study. This novel therapy has currently only been studied in the outpatient setting and only 0.7% of patients were classified as NYHA class IV and < 25% NYHA class III. Although only patients in the outpatient setting were included in the pivotal trial, institutions may receive formulary requests for maintenance/initiation of therapy. The objective of this study was to determine if sacubitril/valsartan has a potential role in heart failure management in the inpatient setting.

Methods: This study was approved by the Palm Beach Atlantic University Institutional Review Board. A retrospective observational study was performed via electronic chart review of all patients with a primary diagnosis of heart failure from two community hospitals (327 & 233 beds). The study outcome was number of hospitalized heart failure patients that would be appropriate candidates for initiation of sacubitril/valsartan therapy based upon drug labeling, guidance from the ACC/AHA/HFSA focused update on new pharmacologic therapy for heart failure, and inclusion criteria from the PARADIGM-HF study. Statistical significance was determined using Chi Square Test of Proportions. Secondary outcomes include number of patients with an order for sacubitril/valsartan who were appropriate candidates, number of patients with an order for sacubitril/valsartan who were not appropriate candidates, readmission within 90 days, length of stay, NYHA classification, compliance with 36-hour washout period for patients maintained on an ACE inhibitor, and number of patients who received a dose of sacubitril/valsartan while in the hospital.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-153

Poster Title: Feasibility of a pharmacist managed clinic for patients at risk for metabolic syndrome on psychiatric medications, a pilot study

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Purpose: Mental health disorders are difficult to treat and include avoidance of undesirable side effects when selecting an appropriate antipsychotic agent. Second generation antipsychotics are more frequently prescribed than first-generation due to perceived improved tolerability. However, some second generation antipsychotics have been associated with metabolic side effects such as weight gain, increase in lipids, blood glucose and hypertension. Pharmacist-provided comprehensive medication management for psychiatric patients has been shown to be cost saving and beneficial for patients. The objective of this feasibility study is to determine the utility of a pharmacist managed metabolic syndrome clinic for indigent patients on second generation antipsychotics.

Methods: This study has been approved by the Palm Beach Atlantic University Internal Revenue Board. This is a pilot study conducted at the Community Health Center; a free clinic that serves the indigent population of West Palm Beach, FL. Beginning September 2016 patients at the Community Health Center scheduled to be seen by the clinic's psychiatrist or mental health counselor or managed on antipsychotic medications will be screened for metabolic risk factors. Risk factors include hemoglobin A1C (HbA1C), random blood glucose, weight and blood pressure by point of care testing or from patient charts. Patients with risk factors for metabolic syndrome will be referred to the pharmacist managed clinic at the Community Health Center. The pharmacist will review each patient's current regimen and make recommendations for medication management. Pharmacological and lifestyle interventions will be made as necessary for risk factor management. The number of interventions made by the pharmacist will be

analyzed to determine the feasibility of a pharmacist managed metabolic syndrome clinic. The primary outcome of this study will be the number of interventions made. Secondary outcome will be the number of pharmacological and nonpharmacological interventions. A chi square series will be used to analyze data for both primary and secondary outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-154

Poster Title: Implementation of a diabetic ketoacidosis and hyperosmolar hyperglycemic state protocol via computerized prescriber order entry (CPOE) in an acute care community hospital

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Purpose: Diabetic Ketoacidosis (DKA) and Hyperosmolar Hyperglycemic State (HHS) are serious complications of diabetes mellitus associated with morbidity and mortality. DKA presentation includes uncontrolled hyperglycemia, metabolic acidosis, and increased ketone concentration. HHS is associated with severe hyperglycemia and hyperosmolality in the absence of ketoacidosis. Rapid and appropriate management of these emergencies is vital to improve patient outcomes and decrease mortality. Implementation of a disease specific protocol has been shown to significantly improve the management of DKA and HHS. The purpose of this study is to develop and implement a diabetic ketoacidosis and hyperosmolar hyperglycemic state protocol via computerized prescriber entry (CPOE).

Methods: Study will consist of a retrospective and prospective evaluation of patients admitted for the treatment of DKA and HHS. Patients admitted as a result of DKA and HHS will be identified using Cerner Millennium, an electronic medical record system. Appropriate and timely fluid replacement, correction of electrolyte imbalances, resolution of metabolic acidosis, and length of stay will be compared.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-155

Poster Title: Evaluating adherence of a pain, agitation, and delirium protocol in an intensive care unit at an acute care community hospital

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Additional Author (s):
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Purpose: Most patients who are discharged from an intensive care unit (ICU) recall unrelieved pain and anxiety as a prevailing experience during their ICU stay. In addition, the Joint Commission requires organizations to establish policies regarding proper pain assessment and treatment. The methods used to determine a patient's level of pain, agitation, and presence of delirium are the Critical Care Pain Observation Tool (CPOT), Richmond Agitation Sedation Scale (RASS), and Confusion Assessment Method for the ICU (CAM-ICU), respectively. The purpose of this study is to evaluate the compliance and effectiveness of a pain, agitation, and delirium protocol implemented in an ICU.

Methods: This study will consist of two phases: Phase I will include a retrospective review of data collected prior to a pharmacist intervention, while Phase II will consist of a prospective review by a pharmacist. The primary outcome is to assess the compliance of a pain, agitation, and delirium protocol in the ICU. Secondary outcomes will evaluate ICU length of stay and risk factors for patients with acquired delirium during ICU stay.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-156

Poster Title: Impact of matrix assisted laser desorption ionization time of flight mass spectrometry (MALDI-TOF MS) and antimicrobial stewardship on patient outcomes

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Purpose: Matrix assisted laser desorption ionization time of flight mass spectrometry (MALDI-TOF MS) has allowed efficient and rapid identification of organisms. Compared to conventional techniques, MALDI-TOF MS has higher output and improvements in turnaround time and patient outcomes. Implementation of rapid identification techniques as part of antimicrobial stewardship has been shown to significantly improve time to optimal therapy and reduce hospital length of stay and total cost. The purpose of this study is to reduce time to optimal antibiotic therapy and length of stay in critical care units.

Methods: This study will consist of two phases. Phase I will include a retrospective review of patients empirically treated in critical care. Phase II will consist of a prospective assessment of MALDI-TOF MS utilization and real time antimicrobial stewardship intervention. Time of first appropriate antibiotic de-escalation dose, total time of antimicrobial therapy, and length of stay in critical care will be compared.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 9-157

Poster Title: Implementation of a pharmacist-driven vancomycin dosing nomogram in hospitalized patients

Primary Author: Adam Harnden, PGY-1 Adult Sacred Heart Hospital Residency Program, FL; **Email:** adam.harnden@shhpens.org

Additional Author (s):
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Purpose: Vancomycin requires careful dosing and monitoring to achieve therapeutic concentrations and avoid potential side effects such as nephrotoxicity and bacterial resistance. Prior to this study, vancomycin was dosed per pharmacists by a variety of methods at Sacred Heart Hospital. A vancomycin dosing nomogram and pharmacokinetic calculator were developed with the aim to standardize pharmacist dosing of vancomycin and increase percentage of patients achieving therapeutic troughs. The objective of this study is to evaluate the outcomes of implementation of a vancomycin dosing nomogram and pharmacokinetic calculator at a community hospital.

Methods: This study consists of analysis of patient outcomes prior to and after the implementation of a vancomycin nomogram and pharmacokinetic calculator. The primary outcome is percentage of patients with a steady state trough within a predetermined acceptable therapeutic range. The secondary outcome examines percentage of patients with therapeutic drug levels corresponding with dose regimens from the nomogram. A retrospective chart review was conducted on all adult patients who received at least three doses of vancomycin and had a level drawn . Patients are excluded if they were pregnant, had cystic fibrosis, or unstable renal function. Data collected included patient demographics, renal function, vancomycin administrations, and vancomycin drug levels. A comparative evaluation and statistical analysis will be made between the two cohorts.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-158

Poster Title: Development and implementation of a chemotherapy induced nausea and vomiting protocol in a pediatric population

Primary Author: Quianna Harris, Sacred Heart Health System, FL; **Email:** quianna.harris@shhpens.org

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Purpose: Chemotherapy induced nausea and vomiting (CINV) can be an issue for pediatric patients experiencing the noxious therapy. Implementing a guideline-based CINV protocol that accounts for a regimen's emetogenic potential and uses patient characteristics and condition is ideal. Evaluating the institution's current chemotherapy orders presented the opportunity for enhancement. The Joint Commission Medication Management Standards and The Children's Oncology Group (COG) Guideline on Prevention of Nausea and Vomiting due to Antineoplastic Medication in Pediatric Cancer Patients present valuable information on creating proper protocols. This project was designed to improve patient care, enhance patient safety, and become complaint with Joint Commission standards.

Methods: A medical team consisting of a pharmacy resident, pharmacist, and oncologist at a pediatric hospital will collaborate to change the current chemotherapy order sets by incorporating a standardized chemotherapy induced nausea and vomiting (CINV) protocol. Changes will be made based on The Children's Oncology Group (COG) Guideline on Prevention of Nausea and Vomiting due to Antineoplastic Medication in Pediatric Cancer Patients, Joint Commission Medication Management Standards, and other pertinent research. Additionally, the use of a standard nausea scale to determine the severity of nausea will also contribute to improving patient care. Nurses will be assessed before and after implementing the new chemotherapy order sets using a survey on the ease of executing orders. The finished protocol will be submitted to the Pharmacy and Therapeutics (P&T) committee at the hospital for review and approval.

Results: None Applicable

Conclusion: None Applicable

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-159

Poster Title: Assessing the Use of Stress Ulcer Prophylaxis in ICU Patients in a Community Hospital

Primary Author: Andrew Molinaro, Sacred Heart Hospital, FL; **Email:** andy.molinaro1@gmail.com

Additional Author (s):

Purpose: The use of stress ulcer prophylaxis in the intensive care unit population is common practice. The pharmacist has identified multiple patients who did not meet criteria to be on any type of stress ulcer prophylaxis during their stay in the ICU. The addition of unnecessary medications adds costs to the patient and to the hospital and takes time away from the pharmacist. The potential for drug interactions and side effects also increases when the patient is on additional medications. This drug-use evaluation was designed to gather objective data on the use of these medications in an ICU population.

Methods: The pharmacist will evaluate the drugs of all of the patients on two intensive care unit floors in the community hospital. Using updated guidelines in regards to stress ulcer prophylaxis, the pharmacist will collect information on each of the patients currently on a proton-pump inhibitor or H2-receptor antagonist. The patients who are on these medications will be assessed as to whether or not they have a proper indication to be on these medications according to the guidelines. This information will then be collected and documented accordingly in order to gather objective data on the use of these medications and if their use is warranted. A cost-savings analysis will then be performed. Using the information gathered, the pharmacist will then analyze the data to see if a new pharmacist protocol may be warranted in regards to the overuse of these medications.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-160

Poster Title: Development and implementation of a pharmacy-driven HIV medication reconciliation process

Primary Author: Mike Turk, Sarasota Memorial Health Care System, FL; **Email:** john-turk@smh.com

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Purpose: Medication reconciliation errors committed during transitions of care for HIV patients are well-described in the literature, with lack of pharmacist comfort with HIV medications cited as one of many reasons. Literature shows that Involving pharmacists with the medication reconciliation process has been shown to significantly lower these errors in the general patient population, and it further suggests that the most effective HIV-specific medication reconciliation interventions included pharmacists with training in infectious disease. Combining pharmacy-driven medication reconciliation along with pharmacy staff education targeting HIV therapy addresses both of these deficiencies in order to effectively reduce medication reconciliation errors.

Methods: A medication reconciliation process for HIV patients was implemented at an 819-bed community hospital in October 2016. This process targeted all admitted HIV patients at least eighteen years of age and with projected length of stay greater than forty-eight hours. As part of this process, pharmacy staff received education in HIV therapy. After implementation, a convenience sample of all patients admitted over a five-month period is to be analyzed by retrospective chart review. IRB approval will be obtained prior to data collection. Based on historical data, it is expected that a minimum of fifty patients will be included in this sample. Data to be collected includes patient demographics, number of medication reconciliations performed, number of HIV patients with an error requiring an intervention by a pharmacist, number of pharmacist interventions required, error types identified by pharmacists, and pharmacist time required to complete the medication reconciliation process. The primary outcome is the percent of HIV patients with an error requiring pharmacist intervention. Secondary outcomes include the number of pharmacist interventions required, the percentage

of HIV patients who received a medication reconciliation within 48 hours, the number and types of errors identified, time from admission to completion of the medication reconciliation, time from order entry to order correction, and length of time pharmacists dedicate to this process. Data will be analyzed by using descriptive statistics.

Results: Research in progress.

Conclusion: Research in progress.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-161

Poster Title: Implementation of Institute for Safe Medication Practices recommendations to prevent medication misadventures in hospitalized patients with Parkinson's disease

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Purpose: Patients with Parkinson's disease (PD) rely on timely administration of their medications in order to lessen symptoms of tremor, rigidity, bradykinesia, and postural instability, and allow them to perform activities of daily living. While hospitalized, standard medication administration times often do not meet the needs of these patients. Additionally, some medications that are contraindicated in PD do not alert prescribers to potential harmful effects when ordered. The objectives of this study are to provide timely administration of PD medications and prevent inappropriate prescribing of contraindicated medications by implementing the pharmacy practice recommendations published by the Institute for Safe Medication Practices.

Methods: Institutional Review Board approval will be obtained prior to data collection. A retrospective chart review will be performed for all inpatients in the month of February 2016 and compared with the post-implementation group of February 2017. The three strategies being implemented are custom designed administration times for select Parkinson's disease (PD) medications, alerts for drug-disease state interactions in the computerized provider order entry (CPOE) system, and focused education provided to nursing and pharmacy staff. The primary outcome is a composite endpoint of number of missed doses and number of contraindicated medications ordered per visit. Other outcomes that will be assessed include reasons for missed doses, percentage of doses given late and number of contraindicated medications administered.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacy Law/ Regulatory/ Accreditation

Submission Type: Research-in-Progress

Session-Board Number: 9-162

Poster Title: Pharmacy implementation of United States Pharmacopeia (USP) chapter in a large community hospital

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Purpose: The risks associated with handling hazardous drugs have long been a concern in healthcare; however, published safety recommendations have not been universally adopted. United States Pharmacopoeia (USP) Chapter < 800> becomes effective July 1, 2018 and contains federally enforceable standards intended to create a safer working environment for personnel who handle these drugs. Although hazardous drug policies and procedures are currently in place at our institution, they do not meet all USP < 800> requirements. The objective of this project is to increase our compliance, focusing on the standards related to pharmacy practice.

Methods: This project, which is designed as a process improvement initiative, received Investigational Review Board exemption status. A gap analysis was performed to determine the hospital's current compliance to USP < 800> requirements. Following completion of the gap analysis, a determination was made to address areas of non-compliance in phases, focusing on pharmacy-specific standards first. An inventory list of all hazardous drugs on formulary was then created which will be further classified and categorized according to the published recommendations from NIOSH (National Institute for Occupational Safety and Health). A risk assessment will be completed on select non-antineoplastic drugs to determine the risk of exposure through normal handling and use, based on the type of hazardous drug, dosage form, packaging, and manipulation, as defined by USP < 800>. Current hospital policies will then be revised to more clearly define the requirements for receipt, storage, manipulation, transportation, deactivation/decontamination, waste management, personal protective

equipment, and other factors related to the handling of each category of hazardous drug. Finally, pharmacy and nursing staff will be educated on the revised hazardous drug policies and procedures through interactive online modules and live presentations.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-163

Poster Title: Implementation of a procalcitonin algorithm to reduce length of antimicrobial therapy in trauma intensive care unit patients

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Purpose: Procalcitonin (PCT) is a precursor to calcitonin that is produced by the C cells of the thyroid gland. PCT levels increase and decrease with the onset and resolution of bacterial infections, making it a useful biomarker in patients with suspected sepsis. PCT guided antibiotic de-escalation has been well studied in critically ill patients; however, data regarding the use of PCT in the trauma intensive care unit (ICU) is limited. The purpose of this study is to evaluate the impact of a PCT guided algorithm on antimicrobial use in trauma ICU patients with suspected sepsis.

Methods: This study will be submitted to the Institutional Review Board for approval prior to data collection. This retrospective study will compare pre and post-algorithm implementation patient groups. The primary outcome is length of antimicrobial therapy in trauma ICU patients with suspected sepsis. Secondary outcomes include hospital and trauma ICU length of stay. The electronic medical record and Trauma Registry will be used to identify patients who are admitted to the trauma ICU, meet sepsis criteria during admission, and receive antibiotics for at least 48 hours. Patients are excluded if they are neutropenic, immunosuppressed, given antibiotics for surgical prophylaxis, or diagnosed with infections that require long-term antimicrobial therapy (e.g. endocarditis, osteomyelitis, Mycobacterium tuberculosis, Pneumocystis jirovecii, Toxoplasma gondii). Patients in the post-algorithm implementation group must have at least one baseline and one follow-up PCT level appropriately drawn. Data collected will include the following: baseline demographics, length of stay, acute physiology and chronic health evaluation (APACHE) IV score, diagnosis, white blood cell count, blood urea nitrogen, temperature, serum creatinine, microbiology data, antibiotic(s) used, and duration of

antimicrobial therapy. Descriptive statistics will be used to describe both continuous and categorical variables with frequencies being described as percentages. The primary and secondary endpoints will be described using mean and standard deviation and a student's t test will be used to analyze the differences among the groups.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-164

Poster Title: Development and implementation of a vancomycin area under the curve/minimum inhibitory concentration ratio calculator and dosing protocol at a large community hospital

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Purpose: The pharmacodynamic parameter that best predicts efficacy of vancomycin for serious Staphylococcus aureus infections is the 24-hour area under the curve/minimum inhibitory concentration (AUC/MIC) ratio. Current guidelines recommend targeting a vancomycin trough between 15-20 mcg/mL in order to achieve the goal AUC/MIC ratio of greater than 400. Recent literature suggests trough concentrations greater than 15 mcg/mL are associated with increased rates of nephrotoxicity and that the target AUC/MIC ratio may be achieved with serum trough levels between 10-15 mcg/mL. In order to improve the accuracy of AUC calculations, a peak-trough vancomycin dosing protocol will be implemented using a spreadsheet-based calculator.

Methods: This retrospective observational study will be approved by an institutional review board prior to data collection. A random sample of 100 adult inpatients will be included in the analysis. Inclusion criteria: receipt of pharmacy-dosed vancomycin using the new AUC-dosing method, treatment of moderate-severe infections caused by laboratory-confirmed Staphylococcus aureus for which susceptibility information is available, and at least one appropriately drawn peak and trough vancomycin concentration. Infections of the central nervous system, skin and soft tissue, and urinary tract will be excluded. Data to be collected includes patient demographics, baseline serum creatinine, infection type, vancomycin loading dose, initial maintenance dose, peak and trough vancomycin levels, and bacteria MIC. Ideal body weight, adjusted body weight, creatinine clearance, and area under the concentration-

time curve will be calculated. The primary outcome will be percent of patients who meet the AUC/MIC goal of greater than or equal to 400. Secondary outcomes will include: mean initial trough concentration in patients who meet the AUC/MIC goal compared with those who do not; correlation of two methods of AUC-estimation (previously validated equation vs. new computerized spreadsheet-based calculator method using population parameters) with patient's actual AUC; and percent of patients meeting AUC/MIC goal stratified by initial trough concentrations, age, weight, and indication.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-165

Poster Title: Implementation of a multimodal initiative to decrease intravenous proton-pump inhibitor use in a large community hospital

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Purpose: Proton-pump inhibitors (PPIs) are associated with an increased risk of adverse effects such as ventilator associated pneumonia and Clostridium difficile infections. Despite these risks, oral and intravenous (IV) PPIs continue to be used for stress ulcer prophylaxis (SUP) instead of H2 receptor antagonists (H2RAs). Intravenous PPIs cost significantly more than H2RAs and oral PPIs. They also carry additional risks associated with the administration of any IV medication. The use of IV PPIs should be limited to indications where they are preferred to alternative therapies. The objective of this study is to decrease IV PPI use at a large community hospital.

Methods: This study is subject to review by the hospital's Institutional Review Board. The multimodal initiative will involve the development of a medical-staff approved order set for IV PPIs which requires prescribers to select an indication for using an IV PPI, the removal of IV PPIs from physician-specific order sets, and the education of pharmacy staff on the hospital's automatic IV to oral conversion protocol. Prescribers will select from three indications when ordering an IV PPI: active gastrointestinal bleed, home medication while nil per os, and "other." Currently, the hospital's automatic IV to oral protocol is rarely utilized. It is often difficult for pharmacists to ascertain why an IV PPI was ordered. Attaching indications to IV PPI orders will facilitate pharmacist recognition of orders that are eligible for an IV to oral switch.
Adult inpatients who receive at least one dose of an IV PPI using the order set will be included. Patients admitted to the hospital's trauma or psychiatric services will be excluded. The primary outcome will compare the average duration of IV PPI therapy per 100 patient days during the study period to a historical control. Additional endpoints will include the percentage of IV PPI

orders transitioned to an oral PPI, the percentage of interventions accepted, and the financial impact of the initiative.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-166

Poster Title: The influence of education on practitioners' comfort in prescribing patient-specific hormonal replacement therapy: A study from the ACO Research Network, Services and Education (ACORN SEED).

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Purpose: Following the publication of the Women's Health Initiative and its results on the long term risks and benefits of hormone replacement therapy (HRT), prescribing patient specific HRT has decreased. As a result, practitioners may fall into one of three groups in regards to their opinions of HRT: those who have decreased HRT prescribing due to concern from the WHI results, those who continue to prescribe HRT without concern, and those newly graduated who have been rarely exposed to HRT. If education that explained how proper patient-specific HRT could be safely prescribed, then practitioners may be more comfortable with such therapies.

Methods: A pharmacist in post-graduate residency within an independent compounding pharmacy in Southern Florida developed the intervention. The intervention, an in-service education, will be delivered to primary care practioners within Nova Southeastern University's practice based research network, The ACO Research Network, Services and Education (ACORN SEED). The in-service will include an introduction to hormonal replacement therapy (HRT), a background to women's health and cycle changes, and the tools to prescribe. Prescriber participants will be surveyed twice, once immediately before the in-service, and once immediately after. The pre- and post-surveys will evaluate the practitioner's opinions and comfort in prescribing patient specific HRT. Baseline characteristics of participants, including gender, practice specialty, and previous HRT education exposure will also be collected. The surveys will be further evaluated using descriptive statistics.

Results: Results of this study will be presented at the American Society of Health Systems Pharmacy Midyear 2016 Clinical Meeting.

Conclusion: Results of this study may show how patient-specific hormonal replacement therapy education could improve prescriber's comfort in such therapies.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-167

Poster Title: Analysis of empiric selection and utilization of vancomycin and piperacillin-tazobactam in the treatment of cellulitis

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Additional Author (s):

Purpose: The objective of this study is to evaluate the appropriate empiric selection and utilization of vancomycin and piperacillin-tazobactam for the treatment of cellulitis. The results of this analysis will be used to reinforce the importance of an Antimicrobial Stewardship Program at our institution and to aid in changes in practice in order to improve therapeutic outcomes and decrease the risk for the development of multidrug resistant pathogens.

Methods: An IRB-approved retrospective chart review will be conducted in patients at our institution who received a primary diagnosis of lower extremity cellulitis between July 2014 and July 2016. Included patients must be greater than or equal to 18 years of age and have received the empiric antibiotic regimen consisting of both vancomycin and piperacillin-tazobactam. Patients will be excluded from the analysis if they have also received the diagnosis of a diabetic foot ulcer or have a concomitant infection other than a skin and soft tissue infection (SSTI) requiring the use of broad-spectrum antimicrobials. The first 100 patients meeting study criteria will be included in the evaluation. Data to be collected will include basic patient demographics, presence of systemic inflammatory response criteria, presence of immunosuppression, documentation of failed oral antibiotic therapy, presence of skin sloughing or bullae, history of multidrug resistant infections, and risk factors for methicillin-resistant Staphylococcus aureus infection. The overall appropriateness of the empiric regimen will be evaluated using the most current Infectious Diseases Society of America Practice Guidelines for the Diagnosis and Management of Skin and Soft Tissue Infections.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-168

Poster Title: Assessment of intravenous iron sucrose use at a community-based hospital

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Purpose: The standard of care for iron deficiency anemia is oral iron. Parenteral iron is reserved as first line for pregnant women, dialysis patients, patients who cannot tolerate/absorb oral preparations, or patients with unresolved bleeding. At Baptist Health South Florida (BHSF), an intravenous (IV) iron algorithm has been proposed to streamline the use of IV iron sucrose (Venofer®). This study aims to determine if patients who received Venofer® as first line therapy met the criteria of BHSF's proposed algorithm, to assess if patients had baseline hemoglobin, transferrin saturation (TSAT), and ferritin levels, and to estimate the cost savings of the algorithm.

Methods: This is a single-centered, retrospective chart review of fifty adult inpatients treated with Venofer® as first line therapy for iron deficiency anemia during June 2016 and approved by BHSF's Institutional Review Board. An electronic user data access report will be used to identify patients who meet the inclusion criteria. Patients younger than eighteen years of age, patients who were first treated with oral iron supplementation, and outpatients will be excluded from the study. Fifty patients will be selected at random to review their electronic medical records and determine if they were dialysis patients, pregnant women, gastric surgery patients, patients with gastrointestinal (GI) disorders, malabsorption syndromes, blood loss, or not tolerating oral intake. The fifty records will be reviewed to identify how many patients had baseline hemoglobin, TSAT, and ferritin levels. The potential cost savings of using oral iron therapy as first line therapy will then be calculated based on the total cost of Venofer® received by patients who did not meet criteria for first line use of Venofer®.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-169

Poster Title: Evaluating the impact of pharmacist follow-up on discharge medications for stroke and transient ischemic attack patients

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Purpose: It is recommended by stroke prevention and cholesterol guidelines that most patients with a diagnosis of stroke or transient ischemic attack should be started on aspirin and/or other antithrombotics, and statins. It has been observed in our institution that it is not uncommon for these patients to not be discharged on what medications the neurologists have recommended in their progress notes. When this occurs, patients are at an increased risk for being readmitted for subsequent ischemic events. The purpose of this study is to determine the impact of pharmacist follow-up on discharge medications for stroke or transient ischemic attack patients.

Methods: This study is designed as an observational study. Beginning in August 2016, a pharmacist-led service was introduced at our institution. For this service, pharmacists review the chart of every patient who is discharged with the diagnosis of stroke or transient ischemic attack to determine if the patient was discharged on the medications that the neurologist had recommended. Specifically the pharmacists will be reading progress notes to determine what the recommendation from the neurologists were and if there was any documented reason from the primary physicians that he or she disagreed. If a patient is not discharged on the recommended medications, and the primary physician did not document against the recommendation, follow-up with a physician will performed by the pharmacist.
Data from before the implementation of this service will be compared to after its implementation to determine the percentage of patients that were discharged on the neurologists' desired medications. The study population includes patients that are 18 years old or older who have had an admission during the study period with a diagnosis of a stroke or transient ischemic attack.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-170

Poster Title: Evaluation of Clinical Pharmacist to the Post-ED visit Review of Discharge Cultures and Antimicrobial Regimens

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Purpose: Currently in our emergency department (ED), cultures obtained on discharged patients are reviewed in a central location by registered nursing staff. Current protocols require nursing staff to contact ED physicians for antimicrobial selection and orders. Due to the high work load burden of ED physicians, this often leads to a delay in communication and ultimately delay in treatment. Implementing a pharmacist driven antimicrobial selection protocol, pharmacy would be contacted to determine antimicrobial. By doing so, the hope is to reduce burden of ED physicians, work collaboratively with nursing staff and decrease time to treatment for the patient.

Methods: Conduct a retrospective observational study, observing time-to-treatment differences between nurse review of cultures with physician contact for antimicrobial management versus nurse review of cultures with pharmacist driven protocol for uncomplicated antimicrobial management, in discharged adult ED visits from October 2016 to October 2017. Time-to-treatment will be observed at an off-site call center associated with St. Anthony's Hospital and other BayCare affiliates. Through implementation of a P&T approved, pharmacist driven antimicrobial selection protocol, pharmacists will now be contacted to determine antimicrobial selection for uncomplicated infections, such as urinary tract infections, skin and soft tissue infections and gastrointestinal infections. Pharmacists will then be responsible for ordering the medication and contacting the patient to inform them of culture results and counsel on therapy selected. Physicians will continue to be contacted for critical cultures, including positive blood and sputum cultures and for patients who have developed

additional or worsening symptoms since discharge. The analysis will be conducted to compare the pre- and post-implementation of the pharmacy service. Secondarily, the study will evaluate differences in antibiotic selection. Additionally, the study will evaluate the potential of billing for medication therapy management (MTM) services conducted by the pharmacists.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-171

Poster Title: Evaluation of process efficiency of chemotherapy regimens requiring post-hydration

Primary Author: Kyle Jones, St. Joseph's Children's Hospital, FL; **Email:** kyle.jones@baycare.org

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Purpose: Pediatric cancers place high financial and socioeconomic burdens on patients and their families. It has been observed at our institution that pediatric oncology patients treated with chemotherapy regimens requiring post-hydration may be having extended inpatient length of stays. The primary objective of this study is to examine the inpatient admission in selected patients, determine process changes that can be implemented, and if these changes result in a decrease in extended inpatient stays. Secondary objectives are to perform a cost savings analysis on the process changes implemented and determine the safety of advancing the administration times through a retrospective chart review.

Methods: This prospective/retrospective process improvement study will evaluate the efficiency and length of stay for chemotherapy patient admissions requiring post-hydration fluids at St. Joseph's Children's Hospital. A cohort of patients will be identified by their chemotherapy admission and each step of their inpatient process (admission, assessment, treatment initiation) will be timed. Next, a rapid cycle improvement strategy will be utilized to determine what processes in the inpatient admission can be improved. Once the changes have been implemented, identified patients' charts will be retrospectively reviewed to determine the adherence to the modified processes and the efficacy of the implemented changes to reduce extended inpatient admissions. From there, a cost savings analysis will be utilized to determine the financial impact of modified process. For the retrospective arm of the study, patients who received chemotherapy requiring post-hydration between January 1st 2016 and July 1st 2016 will be identified. These patients' charts will be reviewed to determine if length of stay was appropriate. The retrospective chart review will also include determining if chemotherapy administration times were advanced. Occurrence of drug specific toxicities communicated to the providers via phone calls, electronic communication, clinic visits, or inpatient readmissions

will be evaluated to determine safety of chemotherapy administration advancement compared to patients who had a normal administration schedule.

Results: n/a

Conclusion: n/a

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-172

Poster Title: Evaluation of the effect of program introduction type in a transitions of care pharmacy program on 30-day hospital readmission

Primary Author: Lauren Briggs, St. Joseph's Hospital, FL**; Email:** lauren.briggs@baycare.org

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Purpose: Successful transitioning of patient care from inpatient to outpatient setting is important for improving patient outcomes and preventing hospital readmissions. BayCare Health System implemented a Transitions of Care pharmacy service in 2015, with a goal to reduce 30-day readmission rates and improve patient safety. The service focuses on continuity of care after discharge. The purpose of this study is to compare 30-day readmission rates of patients followed by the pharmacy service based on the type of program introduction. The study's main objective is to evaluate the effectiveness of different introduction processes of the program in reducing 30-day readmission rates.

Methods: This study is a retrospective observational study that will be submitted to the Institutional Review Board for approval. BayCare's Transitions of Care pharmacy service aims to reduce hospital readmission rates through three main pharmacist-patient interactions: an initial introduction, and two follow-up telephone calls at post discharge days 3-7 and day 21. This study will focus on three patient population groups, each defined by the type of program introduction process that was provided: an in-patient visit, BayCare's Get Well Network Video (an educational tool introducing the program), or no initial introduction. The primary outcome of the study is all cause 30-day readmission to the same facility following inpatient admission. The secondary outcome of the study is the number of pharmacist-patient interactions completed for each type of initial introduction process. Only adult patients who are Medicare A/B beneficiaries with discharge disposition to home will be included. Oncology and hospice patients will be excluded. Data will be collected utilizing the program's internal data tracking sheet and Cerner Electronic Medical Record. Data collection will include type of program introduction process, readmission within 30 days of discharge, number of pharmacist-patient

encounters completed (call completion rates), patient readmission risk, and patient demographics.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 9-173

Poster Title: Implications of a hydromorphone dose interchange policy on pain management and patient safety at a large community hospital

Primary Author: Katelyn Sommerer, St. Joseph's Hospital, FL; **Email:** katelyn.sommerer@baycare.org

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Purpose: Hydromorphone, a potent opioid agonist, comes with a Black Box Warning for risk of respiratory depression. As such, caution is advised when dosing hydromorphone in opioid-naïve versus opioid-tolerant patients. In the hospital setting, hydromorphone is commonly used in the management of acute pain. Challenges exist in balancing appropriate starting doses that both are safe and can adequately treat pain. This study aims to evaluate the effect of an initial intravenous hydromorphone dose reduction on pain control in opioid-naïve patients. Secondarily, this study will determine if incidence of adverse effects associated with hydromorphone toxicity is reduced following policy implementation.

Methods: This is a retrospective cohort study of opioid-naïve patients who received intravenous hydromorphone between January 2008 and December 2015. This surrounds the time that the hospital's hydromorphone dosing interchange policy was implemented in August 2010. Patients at least 18 years of age with documented intravenous hydromorphone administration will be identified through the electronic medical record system. Data to be collected include: patient demographics, pain scores before and after intravenous hydromorphone administration, total daily dose of hydromorphone up to 72 hours or until dose escalation/opioid rotation, oxygen saturation, respiratory rate, and documented use of naloxone. Average percent reduction of pain scores and associated adverse effects of hydromorphone toxicity such as respiratory depression will be compared. All data will be de-identified and kept confidential. This study has been submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-174

Poster Title: Pharmacist-driven Vancomycin Dosing and Monitoring Guidelines in Pediatric Patients

Primary Author: Kelsey Hyman, St. Joseph's Hospital, FL; **Email:** kelsey.hyman@baycare.org

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Purpose: Pharmacokinetics in pediatric patients vary between age groups and individual clinical characteristics and as a result, there has not been an accepted standardized method of vancomycin dosing in this patient population. There has been a climb in vancomycin nephrotoxicity as vancomycin dosing increases to overcome resistance. The purpose of this study is to evaluate the safety and efficacy of a pharmacist-driven pediatric vancomycin dosing and monitoring guideline at St. Joseph's Children's Hospital and to identify any risk factors that may be associated with vancomycin-induced nephrotoxicity in the pediatric population.

Methods: This will be a retrospective and prospective cohort study to assess the safety and efficacy of a pharmacist-driven pediatric vancomycin dosing and monitoring guideline. Data for Group A [patients prior to the implementation of guidelines (March 2016-September 2016)] and Group B [patients after implementation of guidelines (October 2016-May 2017)] will be collected and compared. Patients will be eligible for inclusion in this study if pharmacy was consulted to dose, they are 1month-18 years old, and have received vancomycin for more than 48 hours. Patients will be excluded if they meet one of the following criteria: less than 1month or greater than 18 years old, pregnancy, cystic fibrosis patient, on extracorporeal membrane oxygenation, renal dysfunction prior to initiation of vancomycin therapy. The primary objective of this study is to assess the safety of the dosing guidelines. Secondary objectives are to assess the efficacy of the dosing guidelines and to identify the associated risk factors of nephrotoxicity in this patient population. Patient demographics, indication for vancomycin, values and trends of serum creatinine, creatinine clearance, urine output, infection markers and their trends, other nephrotoxic agents received, duration of vancomycin treatment, number and value of vancomycin troughs, day(s) to therapeutic trough goal, how often there was a dosage change,

and adverse drug reactions to vancomycin will be collected. This study was sent to Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-175

Poster Title: Evaluation of fixed dose four-factor prothrombin complex concentrate (4FPCC) for urgent warfarin reversal

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John Phillips

Purpose: To evaluate the efficacy, safety, and cost effectiveness of fixed dose four-factor prothrombin complex concentrate (4FPCC) regimen (1500 or 2000 units Kcentra) compared to standard dose regimen (package insert recommended doses).

Methods: This study is a retrospective chart review comparing patients who received fixed dosing of four-factor prothrombin complex concentrate (4FPCC) for emergent warfarin reversal (October 2016 to March 2017) to patients who received standard dosing of 4FPCC (October 2015 to March 2016) prior to the implementation of fixed dosing protocol. Collected data include demographics, warfarin and 4FPCC indications, timing and value of pre-treatment international normalized ratio (INR), timing and number of repeat doses of 4FPCC, additional reversal agents given, timing and value of post-treatment INR (first INR within 8 hours post-4FPCC therapy), and thrombotic events. Cost data for 4FPCC is calculated based on acquisition cost. Patients will be eligible for inclusion if on warfarin and received a dose of 4FPCC. Patients will be excluded if meeting one of the following criteria: trauma patients, age less than or equal to 18, received 4FPCC for non-warfarin reversal, no post-treatment INR, received fresh frozen plasma prior to 4FPCC administration. The primary endpoint of this study is proportion of patients who reached target INR (less than 1.4) within 8 hours post-4FPCC therapy. Secondary endpoints include proportion of patients who reached target INR in sub-populations of weight greater than 100 kg or pre-treatment INR greater than 7.5, thrombotic events up to 7 days post-therapy and cost comparison of different dosing regimens. This study was submitted to Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-176

Poster Title: Effects of atypical antipsychotics on hemoglobin A1c

Primary Author: Sarah Honaker, University of Florida College of Pharmacy, FL; **Email:** honaker41@marshall.edu

Additional Author (s):
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Purpose: It is known that atypical antipsychotics are associated with an increase in hemoglobin A1c; this may increase the risk for the development of diabetes and other metabolic complications. The purpose of this study is to determine the relationship between the change in hemoglobin A1c and the antipsychotic drug prescribed, dose, and duration of therapy in an outpatient setting.

Methods: This study is submitted to the Institutional Review Board for approval. The electronic medical record system (Epic) will identify patients who are prescribed an atypical antipsychotic. We will conduct a retrospective chart review of patients prescribed an atypical antipsychotic since 2011. Patients are eligible for inclusion if they are assigned to a UF Health Internal Medicine provider and are prescribed any of the following atypical antipsychotics between January 1, 2011 through January 31, 2016: aripiprazole, asenapine, brexpiprazole, cariprazine, clozapine, iloperidone, lurasidone, olanzapine, paliperidone, quetiapine, risperidone, or ziprasidone. The following data will be collected: Age, gender, body weight, antipsychotic indication, dose and duration, baseline hemoglobin A1c, and co-morbid conditions. All data will be de-identified and recorded in the Research Electronic Data Capture software program (REDCap). Data will be stratified according to each antipsychotic drug prescribed. The change in hemoglobin A1c from baseline will be calculated. This data will then be statistically analyzed to assess whether there are any differences in hemoglobin A1c according to the antipsychotic prescribed.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 9-177

Poster Title: Comparison of anesthetic delivery methods and opioid administration forty-eight hours after total knee replacement

Primary Author: Leany Capote, University of Miami Health Systems, FL; **Email:** lac254@med.miami.edu

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Purpose: At the University of Miami Hospital, there is a focus to reduce opioid use due to potential adverse reactions. Current practice allows for a variety of anesthetic administration methods in patients undergoing total knee replacement (TKR) surgery. The primary objective of this study is to compare the amount of opioids administered 48 hours after TKR in three arms: (1) patients anesthetized with a single injection into the adductor canal, (2) through a 48 hour catheter into the adductor canal, or (3) as a local infiltrate. Secondary objectives include length of stay (LOS) and adverse events potentially attributed to opioids.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients who underwent a TKR at the University of Miami Hospital from October 1, 2015-September 1, 2016 will be identified using ICD 9 and ICD 10 codes. Approximately 45 medical records will be reviewed and further classified by anesthesia method. University of Miami Regional Anesthesia (UMRA) records will be utilized to identify method of anesthesia administration. Retrospective chart review through Innovian, Meditech and VigiLanz will serve to review non-opioid and opioid analgesic administration, as well as adverse events potentially attributed to opioid administration 48 hours after surgery. Home analgesic medications will be reviewed through Pyxis Connect. The following data will be collected: age, weight, height, body mass index (BMI), allergies, home analgesics, surgical procedure, anesthesia administration method, LOS, opioid administration, non-opioid analgesic administration, naloxone administration, and side effects potentially attributed to opioids 48 hours after surgery. All data will be recorded without patient identifiers. Total opioid administration will be converted to milligrams oral morphine equivalent. The total amount of postoperative opioids administered after each type of block will be compared to determine if one uses less or not.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-178

Poster Title: Impact of medication adherence on hospitalization rates

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Purpose: Adherence to maintenance medications is a vital component of chronic disease management. Medication non-adherence has been associated with disease progression, poor therapeutic outcomes, and an increase in overall healthcare costs. Hospitalization rates are one of the more costly outcomes. Managed Care Organizations track three primary therapeutic areas and report patient adherence rates for HMG-CoA inhibitors, renin angiotensin system antagonists, and oral diabetes medications to the Center for Medicare and Medicaid Services as part of their STAR rating. The purpose of this study is to determine if a relationship exists between adherence of these three medication classes and hospitalization rates.

Methods: A retrospective cohort study of patients who were continuously enrolled in a Medicare Advantage Prescription Drug (MAPD) plan from January 1, 2014 to December 31, 2015 is being conducted. Utilizing methodology developed by RxAnte, a predictive analytics and clinical services company, patients were classified as adherent or non-adherent based on prescription claims history of an HMG-CoA inhibitor, renin angiotensin system antagonist, or oral diabetes medication. A proportion of days covered value of greater than 80% is used to define medication adherence. Adjusting for member-level confounding differences, hospitalization rates will be compared between the adherent and non-adherent populations to determine if medication adherence significantly reduces the risk of a hospitalization. The relative risk of a hospitalization based on medication adherence will be presented along with the 95% confidence interval.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-179

Poster Title: Impact of a pharmacist-driven stress ulcer prophylaxis protocol in a community hospital setting

Primary Author: Megan Graham, West Florida Healthcare, FL; **Email:** ford.megan20@gmail.com

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Purpose: The overuse of proton pump inhibitors and histamine-2 receptor antagonists for stress ulcer prophylaxis has been linked to adverse effects, such as Clostridium difficile infections, pneumonia, bone fractures, and low magnesium levels; however, histamine-2 receptor antagonists are associated with fewer adverse effects than proton pump inhibitors. The purpose of this study is to assess the influence of a pharmacist driven stress ulcer prophylaxis protocol in a community hospital setting with the primary aim of seeing a reduction in inappropriately used stress ulcer prophylaxis medications.

Methods: This retrospective and prospective study will be conducted in a 515 inpatient bed community hospital. Hospitalized adults who receive either a histamine-2 receptor antagonist or proton pump inhibitor will be considered for inclusion. Exclusion criteria include patients with an active upper gastrointestinal bleed or active peptic ulcer disease, receiving dual antiplatelet therapy or concurrent antiplatelet and anticoagulant therapy, solid organ transplant recipient, receiving Viokace via gastric feeding tube, and total gastrectomy. The pharmacist-driven stress ulcer prophylaxis protocol will be implemented on September 28, 2016. Therefore, data will be collected from September 28, 2015 through January 31, 2016 for the pre-implementation phase and from September 28, 2016 through January 31, 2017 for the post-implementation phase. All patient data gathered and assessed for study purposes will be de-identified. The primary outcomes to be measured pre- and post-protocol implementation include the ratio of proton pump inhibitors to histamine-2 receptor antagonists used throughout the facility, the amount of appropriately used versus inappropriately used stress ulcer prophylaxis medications, proton pump inhibitors and histamine-2 receptor antagonists use on general floors versus intensive care unit use, and the number of patients discharged on a

proton pump inhibitor or histamine-2 receptor antagonist. Secondary outcomes to be assessed before and after protocol implementation include stress ulcer prophylaxis cost, stress ulcer rates, Clostridium difficile rates, hospital-acquired pneumonia rates, and hypomagnesemia rates.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-180

Poster Title: Evaluation of fixed versus variable dosing of prothrombin complex concentrates for emergency warfarin reversal in a community hospital setting

Primary Author: Maria Eduardo, West Florida Healthcare, FL; **Email:** maria.eduardo@hcahealthcare.com

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Purpose: Prothrombin complex concentrates (PCC), such as Kcentra, are used for emergency warfarin reversal due to their fast onset and ability to effectively achieve hemostasis. The CHEST Guidelines and AHA/ASA Guidelines recommend using PCC with vitamin K for warfarin-associated major bleeding. West Florida Hospital implemented a trial of fixed dosing of Kcentra in September 2016 replacing the variable dosing strategy. This change was made to streamline patient care and improve patient outcomes. The primary objective of this study is to evaluate the efficacy, safety, and cost effectiveness of fixed-dosed versus variable-dosed Kcentra for reversal of emergent bleed due to warfarin.

Methods: This prospective study will be conducted at West Florida Hospital in Pensacola, Florida. The study will compare the use of fixed-dosed Kcentra 1500 international units to variable dosing. Written informed consent is not necessary since data will be collected using the electronic record database. The variable dosing will be evaluated retrospectively from September 2015 through March 2016. The data for the fixed dosing will be collected prospectively from September 2016 through March 2017. All patient data gathered and assessed for study purposes will be de-identified. The primary efficacy endpoint of this study is to determine the time to Kcentra administration between fixed dosing and variable dosing, reversal of INR to less than 1.5, and achievement of hemostasis within 30 minutes of Kcentra infusion. The primary safety endpoint of this study is the occurrence of thromboembolic complications 7 days post Kcentra administration. A cost analysis will be conducted to determine the difference in treatment cost using variable dosing versus fixed dosing Kcentra and hospital length of stay.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-181

Poster Title: Justification of expansion of hospital-based clinical pharmacy programs to ambulatory medication management services for continuity of care

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Purpose: The benefit of post discharge pharmacy services in enhancing adherence, reducing medication related problems and preventing unnecessary readmissions is well established in the literature. Financial constraints make the expansion of pharmacy services challenging. The purpose of this project is to develop a framework to implement reimbursable post hospital discharge clinical pharmacy services.

Methods: Sources of reimbursement that can be utilized for pharmacist provided clinical services will be evaluated in order to identify programs that can support post hospital discharge Transition of Care services. The project will evaluate the different models of Transition of Care programs, Chronic Care Management and Medication Therapy Management services in order to create a framework of reimbursable services to include follow up phone calls and pharmacy clinic visits. Based on gathered information, the aim is to define which clinical pharmacy services will be better suited to support the needs of our patient population post hospital discharge. A business case will be developed to quantify the number of patients and types of services needed to support a self sustainable program. Patient recruitment is not a component of this project and no patient data will be collected, therefore IRB request for determination indicated that this study is exempt.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-182

Poster Title: Prevalence and economic impact of patient reported penicillin allergy in a community hospital.

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Purpose: Penicillin allergy is the most common drug allergy reported in the United States with a prevalence of 10%. Vague allergy history may result in a patient being mislabeled as penicillin allergic. This often leads to the prescribing of a broader spectrum and more costly antibiotic. The purpose of this study is to quantify the prevalence of patient reported penicillin allergy in our population and evaluate if these patients had received beta-lactam antibiotics in past hospitalizations. In addition, the cost difference between the alternative antibiotic therapy prescribed due to the penicillin allergy history and the standard of care will be calculated.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review of patients reporting a penicillin allergy during their visit to the hospital during a 3-month period from June 1 to September 1, 2016 will be conducted. A computer generated report will be used to identify these patients. The report will include the patient's medical record number, age, gender, ethnicity, allergy to penicillin, and antibiotic regimen during the study period hospital stay. Patients will be stratified by age, gender, and ethnicity to determine if there are any differences in prevalence among groups. The medical record number of the subjects will be used to perform a chart review in order to determine if the patient had received beta-lactam antibiotics during previous hospitalizations in our Health System and identify any untoward reactions described in the clinical notes. All data will be recorded without patient identifiers and maintained confidentially. The cost difference between the beta-lactam antibiotic considered the drug of choice and the alternative regimen received during the study period hospitalization will be calculated utilizing the patients' length

of therapy. This calculation will be used to evaluate the cost incurred by treating patients with alternative therapy due to the proposed allergy to penicillin.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-183

Poster Title: Impact of post-PCI pharmacy intervention on 30-day hospital readmission due to acute stent thrombosis

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Purpose: Non-adherence to dual antiplatelet therapy (DAPT) is the leading cause of acute stent thrombosis (AST) following PCI procedures with stent placement. The purpose of this study is to determine if 30-day readmission rates due to AST are reduced for patients who receive a pharmacist-guided intervention following PCI stent placement compared to those who did not receive pharmacist intervention.

Methods: The study will be submitted to the Institutional Review Board for approval. This retrospective study will compare 30-day readmission rates due to acute stent thrombosis (AST) in patients who received a pharmacist-guided intervention versus patients who did not receive pharmacy intervention. The study group will be identified by generating a list of patients who have previous documentation of receiving post-PCI counseling at Winter Haven Hospital. The control group will consist of patients who underwent PCI stent placement at Morton Plant Hospital, a comparable BayCare System hospital. The control group will be identified by utilizing ICD-9 and ICD-10 codes, yielding a list of patients who underwent PCI-stent placement during the pre-specified time period. Randomization of the control arm will occur by selecting every other patient on the list to be analyzed for inclusion in the study. We will continue this method until we have matched the number of patients in the treatment arm one-to-one. The following data will be collected: date of PCI procedure, gender, age, coagulation labs upon admission, type of stent, previous history of stent placement, and patient specific DAPT regimen. AST readmission will be identified in both study groups by means of a chart review and ICD 9/10 codes. Any documentation of non-adherence to DAPT regimen will also be recorded.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-184

Poster Title: Impact of pharmacist intervention on 30 day readmission rates of patients with chronic obstructive pulmonary disease

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Purpose: In 2015, the Centers for Medicaid and Medicare Services (CMS) added chronic obstructive pulmonary disorder (COPD) to the list of core measures utilized for reimbursement. The objective of this study is to determine whether medication reconciliation and counseling at discharge will decrease 30 day hospital readmission rates of patients with chronic obstructive pulmonary disease (COPD).

Methods: The protocol for the present study will be submitted to the Institutional Review Board (IRB) for approval. Between the months of November 2016 through January of 2017, patients with a primary diagnosis of COPD who are at moderate to high risk for readmission will be identified upon admission to the hospital. These patients will be followed through discharge. Upon impending discharge, medication reconciliation will be performed to identify discrepancies in the final medication list. Patients will also be counseled on their COPD medications prior to leaving the hospital. All patient information will be de-identified and information recorded including admission/discharge dates, length of stay, date of readmission if applicable and medication issues identified prior to discharge. A retrospective review of COPD readmission rates during the same time period the previous year will be conducted for comparison to results from the intervention.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-185

Poster Title: Evaluation of aztreonam utilization in a tertiary care hospital

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Additional Author (s):

Purpose: Aztreonam, a monobactam antimicrobial agent, is commonly reserved for patients with β-lactam allergies requiring broad-spectrum gram negative coverage, including Pseudomonas. Due to increased resistance in gram-negative microorganism isolates and increased costs, antimicrobial stewardship programs have also begun to target aztreonam use in patient self-reported β-lactam allergies. Many hospitals restrict aztreonam to only to patients with anaphylactic reactions to β-lactams. The objective of this medication use evaluation was to assess utilization of aztreonam to aid in the development of Criteria for Use to be suggested to the hospital's Pharmacy & Therapeutics (P&T) committee.

Methods: This medication use evaluation consisted of a retrospective chart review of 28 patients who received aztreonam orders while admitted to a tertiary care hospital. Orders were identified through a Drug Utilization Report from August 1, 2016 to August 31, 2016. Orders were included based on the following inclusion criteria: patients greater than or equal to 18 years old, admission to the tertiary care hospital, and at least one dose of aztreonam administered during admission. Data was accessed using electronic medical records and information was collected using a data collection form. Institutional Review Board approval was not required as this was considered a pharmacy performance improvement project. Data assessment points included allergy documentation history, inpatient locations, indication for use, desensitization attempts, de-escalation patterns following positive culture results, and cost. Aztreonam cost was assessed based on the dose and the number of doses administered to a patient.

Results: Eighty-nine percent of patients had a documented allergy to a β-lactam agent. Specified reactions to β-lactam agents were reported in only 43% of patients. The most commonly listed reaction was hives. Five patients were mechanically ventilated in the ICU while receiving aztreonam. The most common indication for aztreonam for antimicrobial therapy was

cellulitis or wounds (32%). Sixty-eight percent of patients had an Infectious Disease consult placed but only 43% had aztreonam prescribed by an Infectious Disease prescriber. Only 1 patient had desensitization preformed. Fifty-seven percent of patients had a positive culture during following initiation of aztreonam. Only 6 of 16 positive cultures had an identified gram-negative organism that would have the potential to be susceptible to aztreonam. Three patients were not de-escalated from aztreonam to a preferred agent following a positive culture result. De-escalation from aztreonam took on average 1 day following a positive culture result. Four patients were de-escalated from aztreonam without a positive culture result and this was consistently done by an Infectious Disease physician. The total cost of aztreonam based on acquisition cost of the drug from August 1, 2016 to August 31, 2016 was $9343.60.

Conclusion: Aztreonam Criteria for Use was presented to the P&T committee following the completion of this medication utilization evaluation. Aztreonam should be restricted to patients with verified severe β-lactam allergies (anaphylaxis, urticaria, or angioedema) requiring empiric gram-negative coverage. “Unknown reaction” for a patient-reported β-lactam allergy is not an indication for initiation of aztreonam and consultation with an Infectious Disease pharmacist can help aid in deciding an appropriate agent. Therapy should be transitioned to a preferred agent (e.g. fluoroquinolone) as soon as a positive culture result is available. Restriction of aztreonam will aid in both antimicrobial stewardship and cost savings.

Submission Category: Clinical Services Management

Submission Type: Descriptive Report

Session-Board Number: 9-186

Poster Title: Medication reconciliation service for paediatric ward and paediatric intensive care unit in a major acute hospital in Hong Kong

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Purpose: Medication reconciliation has been identified as a major intervention to target and reduce the burden of medication discrepancies and medication errors during transitions in care. Unintended therapeutic changes are common, and suboptimal communication between healthcare providers at care transitions may subsequently result in medication errors. Moreover, these errors can be more vulnerable to children than adults. The aim of medication reconciliation on hospital admission is to improve medication safety by ensuring the medications prior to admission are prescribed appropriately on admission for the pediatric patients through obtaining a patient's best possible medication list from various information sources by clinical pharmacist.

Methods: Medication reconciliation service is provided to patients admitted to the pediatric wards (an 18-bed general pediatric ward and a 7-bed pediatric intensive care unit) in the hospital since Dec 2015. The best possible medication list is reconciled by pediatric clinical pharmacist to include all medications that the patient is taking from hospitals and clinics under Hong Kong Hospital Authority, clinics under Department of Health, private institutions and clinics as well as over-the-counter medications, herbal medicines and traditional Chinese medicines. The clinical pharmacist would verify the medication list through interviews conducted with patients or care-givers if possible. Appropriate documents (e.g. latest Medication Administration Record from the previous wards or institutions) are consulted if necessary for transfer-in cases. The medication list is then compared with the current medications prescribed in the hospital. For any discrepancies found, the clinical pharmacist would investigate the cause of discrepancies based on the available clinical information. The pharmacist should consult the case medical officer for discrepancies if in doubt and provide

interventions if necessary. Patient's medication compliance is checked during interviews to identify any potential admission due to drug non-compliance.

Results: During the period of Dec 2015 to Jun 2016, medication reconciliation was done for 558 patient admissions (495 general pediatric cases and 63 pediatric intensive care cases) in the hospital by pediatric clinical pharmacist. Among these admissions, 87 (15.6%) involved patients with chronic medication use prior to admission, 155 (27.8%) involved patients with short-term episodic medication use and the remaining 316 (56.6%) involved patients with nil medication prior to admission. Sixteen unintended discrepancies in 7 admissions were identified during the period, which accounts for 8.0% of admission cases with chronic medication use. The most common types of discrepancy were omitted medications (56.3%), followed by medications unintentionally ordered (37.5%) and orders with unclear preparation specified (6.3%). Sixteen interventions were provided to doctors and all of them were accepted with problems rectified. Nil medication compliance problems were identified.

Conclusion: An effective process for medication reconciliation can reduce medication errors and support safe medication use by patients. The results of the medication reconciliation service showed that unintended discrepancies can happen in pediatric patients during admission or other transitions of care. Pediatric clinical pharmacist can help to improve medication safety by reducing unintended discrepancies and solving the drug-related problems during transitions of care. These results support the expansion of the service to other pediatric ward units.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-187

Poster Title: Diluted single-syringe administration of adenosine for the rapid conversion of supraventricular tachycardia (SVT) in the Emergency Department

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Purpose: Adenosine administration for the conversion of SVT to normal sinus rhythm (NSR) has a reported success rate of ninety percent. The standard administration method involves undiluted adenosine given intravenously followed by a rapid bolus of normal saline. This method requires a coordinated effort during administration and is prone to error. Complications in administration may lead to decreased conversion rates. The objective of this study is to determine if administering a single syringe of diluted adenosine is non-inferior to the conventional two-syringe method in converting to NSR.

Methods: This will be a single-center, prospective, randomized, non-inferiority study for adult patients presenting to Advocate Christ Medical Center Emergency Department with stable SVT requiring adenosine administration. This study will be submitted to the Institution Review Board for approval. After the diagnosis of SVT is confirmed by a physician, patients will be randomized into the two-syringe control group or the single-syringe treatment group. The primary endpoint will be the percent of patients with successful conversion from SVT to NSR with the administration of adenosine as a single-syringe compared to the conventional two-syringe administration technique. Secondary endpoints include the requirement of repeat doses, administration errors, and adverse events. The following data will be collected: age, gender, weight, history of concomitant disease states, home medications, adenosine administration technique, number of adenosine doses, duration of procedure, reported adverse reactions, site of adenosine administration, and administration errors. Patients will be observed by a study investigator for 30 minutes following the administration of adenosine.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-188

Poster Title: Comparison of phenytoin and levetiracetam for seizure prophylaxis in patients with a severe traumatic brain injury

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Purpose: The Brain Trauma Foundation recently released guidelines for the management of severe traumatic brain injury. These guidelines provided a level II recommendation for the use of phenytoin to decrease the incidence of early post-traumatic seizures (within 7 days of trauma). However, due to minimum adverse effects and drug interactions and the lack of required drug monitoring, levetiracetam has increasingly been utilized for seizure prophylaxis. There have been few studies conducted comparing the efficacy of phenytoin and levetiracetam. The objective of this study is to determine whether phenytoin or levetiracetam is more effective in reducing the incidence of early post-traumatic seizures.

Methods: This will be a retrospective, single center study performed at Advocate Christ Medical Center. The study will be submitted for approval to the Institutional Review Board. Adult patients with a Glasgow Coma Score (GCS) of 8 or less receiving phenytoin or levetiracetam following a traumatic brain injury confirmed with radiographic imaging will be evaluated. Patients with a history of seizures or previously taking antiepileptic medications and pregnant women will be excluded. The primary outcome of this study will be clinical and electroencephalogram (EEG) seizure rates within 7 days of severe traumatic brain injury. Secondary outcomes include late (7 days) seizure rates, mortality, and adverse drug reactions. The following data points will also be collected: length of stay (LOS), Injury Severity Score (ISS), GCS, weight, use of concomitant antiepileptic medications, dose of antiepileptics administered, use of hyperosmolar therapy, type of trauma, neurosurgical intervention, serum phenytoin

levels, and seizure onset. All data will be collected without patient identifiers and confidentiality will be maintained.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-189

Poster Title: Phenobarbital front loading dose compared with low intermittent doses for benzodiazepine refractory severe alcohol withdrawal: a retrospective comparison

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Purpose: High variability exists in refractory alcohol withdrawal syndrome (AWS) management which has been defined as, patients requiring more than diazepam 40 mg or equivalent within one hour to achieve symptom control. Benzodiazepines remain the primary treatment for AWS. However, adjunct phenobarbital (PB) dose escalation strategies in ICU patients have shown significant reductions in the need for mechanical ventilation. The purpose of this study is to compare efficacy and safety outcomes of critically ill patients with AWS who were treated with a front loading PB protocol versus a PB low intermittent dosing protocol after benzodiazepines were ineffective for controlling symptoms.

Methods: The following study is a single-center, pre-post study conducted in patients 18 years and older admitted to the Medical Intensive Care Unit (MICU) of a large community teaching medical center requiring treatment for AWS. The study is pending Institutional Review Board approval. The study will include a retrospective efficacy and safety comparative analysis of two severe AWS protocols, requiring a Clinical Institute Withdrawal Assessment for Alcohol Scale (CIWA-Ar) greater than or equal to 20. The CIWA-Ar and Richmond Agitation and Sedation Scale (RASS) are utilized for symptom control assessments in non-intubated and intubated patients, respectively. Pre-arm low-intermittent PB dosing strategy includes a one-time bolus of 260mg IVP followed by PB 130 mg IVP every 15 minutes for 8 doses, maximum 1,300 mg of PB collected from January 2013 to July 2015. The post-arm includes a one-time 10 mg/kg PB loading dose IVPB over 30 minutes, collected from July 2015 to December 2016. The primary outcome is the time from phenobarbital administration to CIWA-Ar score less than 20. Secondary outcomes to be collected include ICU length of stay, respiratory failure,

complications of alcohol withdrawal, phenobarbital adverse effects, and readmission to ICU. The following data points will also be collected: concomitant amounts of sedative medications, serum PB levels, intubation rates, prior alcohol use, alcohol serum levels if available, and various laboratory data.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-190

Poster Title: Incorporating student pharmacists in the admission reconciliation process at a community teaching hospital

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Additional Author (s):
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Purpose: Medication reconciliation is an important part of improving patient care when a patient transitions between different levels of care within a hospital system. Up to a quarter of all prescription medications taken by patients prior to admission are not recorded correctly within the electronic medical record. Student pharmacists can play an integral role in obtaining medication histories on admission and allow pharmacists to have more time to provide other clinical services. The objective of this study is to evaluate the impact of incorporating student pharmacists in the admission reconciliation process.

Methods: This study will be completed at a 408-bed academic medical center in the North side of Chicago over a six-week period between October 2016 and November 2016. A one-week run-in phase will be conducted to determine the average time for a pharmacist to conduct a medication history without student pharmacists. After the run-in phase, student pharmacists will be assigned to perform and document thorough medication histories. Students will screen for medication related problems and make recommendations to the pharmacist to optimize patient care. The accuracy of the medication histories obtained by student pharmacists will be reviewed by a clinical pharmacist. Patients admitted to the following units will be excluded from the study: neonatal intensive care, pediatrics, mother/baby, labor and delivery, rehabilitation, and psychiatric. The primary outcome will be to evaluate the accuracy of student pharmacist obtained medication histories. The secondary outcomes will be to evaluate the average pharmacist time to review a medication history completed by a student, percentage difference of completed medication histories pre- and post student involvement, total number of discrepancies observed (e.g. allergy clarification, incorrect dose, incorrect route, incorrect frequency, incorrect formulation, drug omission, prescribed OTC missed, drug addition,

duplicate entry, patient compliance, time of last dose taken, and other), and the types of discrepancies observed by a pharmacist.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-191

Poster Title: Implementation of a pharmacist-run outpatient transitions of care clinic in an internal medicine clinic

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Purpose: The literature reports that as many as 49% of patients experience a preventable medication error post-hospital discharge, which may lead to serious adverse events and readmissions. The Affordable Care Act has enacted hospital penalties for readmissions within 30 days at the same site. Previous trials have shown decreased readmissions with pharmacist intervention at discharge. The objective of this project is to implement and evaluate the impact of a pharmacist–run outpatient Transitions of Care (TOC) clinic by optimizing patients' medication therapy by empowering patients through education.

Methods: This project is a single site, quality improvement project conducted from December 1-December 31, 2016. It is a prospective analysis of outcomes of pharmacist managed TOC services combined with medical care provided by physicians compared to outcomes of standard medical care provided by physicians in a historical group. Patients will be scheduled for an appointment with the TOC pharmacist along with their first primary care physician visit post-discharge. Patients will be instructed to bring in all medications, which the pharmacist will review and compare to their hospital course and discharge list. Patient's medication knowledge and adherence will be assessed during the visit. Additionally, the pharmacist will screen for medication related issues such as duplication, omission, drug interactions and inappropriate therapy then communicate recommendations with physician prior to patient's visit to optimize therapy. All medications will be reviewed with the patient and the pharmacist will provide disease state and medication education to help empower patients to take medications correctly. The pharmacist will conduct a 2-week follow up phone call to the patient and administer a questionnaire similar to that completed at the visit to assess medication knowledge and adherence. The primary outcome will be 30-day hospital readmission rates of internal medicine clinic patients. Secondary outcomes will be collected for the prospective

group only and will include pharmacist interventions, patient knowledge of medications and adherence.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-192

Poster Title: Evaluation of the hematologic effects associated with same-day pegfilgrastim therapy in children receiving myelosuppressive chemotherapy

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Purpose: Pegfilgrastim is a granulocyte-colony stimulating factor (G-CSF) that promotes neutrophil proliferation following myelosuppressive chemotherapy. In children, pegfilgrastim is indicated for the prevention of primary and secondary chemotherapy-induced neutropenia. However, it is not recommended to be administered within 24 hours after receiving chemotherapy. The activating effect of G-CSF on myeloid progenitor cells during this time can increase the risk of exposure to cytotoxic agents, which may result in prolonged neutropenia. The purpose of this study is to evaluate the hematologic safety of same-day administration of pegfilgrastim in children receiving chemotherapy.

Methods: This retrospective chart review has been approved by the Institutional Review Board. The electronic medical record database was queried for all courses of pegfilgrastim administered to children for the prevention of chemotherapy-induced neutropenia. Patients were excluded from the study if they possessed confounding conditions such as non-malignant myelosuppressive disorders, total body irradiation, or hematopoietic stem cell transplantation. Patients were also excluded if they received pegfilgrastim therapy within 14 days prior to chemotherapy. Pegfilgrastim administrations will be categorized as administered within 24 hours or greater-than 24 hours after myelosuppressive chemotherapy administration. The following variables will be collected: patient age, sex, race, ethnicity, weight, height, malignancy, chemotherapy regimen and administration time(s), and pegfilgrastim dose and administration time. The primary objective is to evaluate hematologic safety based upon hospitalizations due to febrile neutropenia following pegfilgrastim administration. Secondary objectives include evaluating the duration of neutropenia and assessing delays in chemotherapy. The incidence of intensive care unit admission and/or mortality will be collected to characterize the severity of hospitalization for febrile neutropenia. It was determined that a

sample size of 480 courses of pegfilgrastim administrations is required to detect a 10 percent difference in the incidence of febrile neutropenia between the comparison groups with 80 percent power.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-193

Poster Title: Implementation of rapid diagnostic testing and treatment algorithm for rapid identification of gram positive cocci in the bloodstream

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Purpose: Rapid diagnostic testing has been shown to decrease time to appropriate antibiotics, length of stay and mortality. Bauer, et al. demonstrated that rapid diagnostic testing has minimal impact on patient outcomes without an antimicrobial steward having an active role in result interpretation. The objective of this project is to evaluate the effectiveness of an antimicrobial stewardship pharmacists-driven treatment algorithm on time to optimal antimicrobial therapy.

Methods: The rapid diagnostic testing algorithm was designed to streamline antibiotic therapy based upon the resulting gram positive cocci. Upon gram positive cocci identification, the pharmacist will review the patient's antimicrobial regimen. If a change is recommended, according to the algorithm, a call will be placed to provider. Primary outcome measures include time to targeted antimicrobial therapy defined as the time from initiation of initial empiric antibiotics to time the antibiotics were tailored to the resulting pathogen. Data collection will consist of 40 patients in the pre-intervention group using traditional organism identification and 40 patients in the post-intervention group using rapid diagnostic testing. Time to targeted antimicrobial therapy and hospital length of stay will be compared between the pre-intervention and post-intervention groups.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-194

Poster Title: Optimization of P2Y12 receptor inhibitor selection for patients with ST elevation myocardial infarction (STEMI) in the emergency department

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Purpose: Current American Heart Association guidelines for patients with a diagnosis of ST elevation myocardial infarction (STEMI) recommend the use of an appropriate loading dose of a P2Y12 inhibitor prior to percutaneous coronary intervention (PCI). The current STEMI order set lacks the ability to select all recommended P2Y12 inhibitors at optimal doses. This study aims to improve patient outcomes by providing guideline-based therapy to STEMI patients. The objective of this study is to determine whether an updated STEMI order set increases utilization of guideline-based treatment in patients admitted to the emergency department with a diagnosis of STEMI.

Methods: This is a single center, retrospective, quality improvement study. The STEMI order set will undergo revisions in the fall of 2016 which will include the addition of updated P2Y12 loading doses. A medication use evaluation will be conducted to identify changes in P2Y12 inhibitor usage in the emergency department three months before and three months after implementation. The electronic medical record will identify patients who were admitted through the emergency department with a diagnosis of STEMI and received a loading dose of a P2Y12 inhibitor prior to PCI. The following data will be collected: age, gender, P2Y12 inhibitor ordered and dose administered. The primary outcome will be the use of a guideline recommended P2Y12 inhibitor loading dose before and after implementation of the order set. Secondary outcomes will examine the difference in usage of each individual P2Y12 inhibitor before and after the implementation of the new order set. A chi square test will be used to analyze demographic data as well as the primary and secondary outcomes.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-195

Poster Title: Comparison of intravenous magnesium sulfate and oral mangesium L-lactate in adult hospitalized patients

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Purpose: Magnesium supplementation occurs frequently in the inpatient setting although there are currently no clearly defined guidelines for how much magnesium to supplement and whether to administer it orally or intravenously. This study will calculate the increase of serum magnesium following supplementation with either oral or intravenous magnesium in order to compare effectiveness between the two routes of administration.

Methods: This retrospective study will use the electronic medical record system to identify occurrences from January 1st, 2013 to January 1st, 2016 when patients under hospitalist care received magnesium supplementation with either intravenous magnesium sulfate or oral magnesium L-lactate. In order to be included within the study, each occurrence of supplementation must also have a documented serum magnesium level within 12 hours prior to the administration as well as another level between 6 to 24 hours after the administration. The dose, route, and frequency of magnesium supplementation will also be recorded from each occurrence. Other patient specific information to be collected includes age, sex, height, weight, and serum creatinine for the purpose of calculating estimated creatinine clearance using the Cockcroft-Gault equation. All patient data will be stored securely and confidentially on the health-system's internal servers. Occurrences will be excluded if the patient is under 18 years old, has a creatinine clearance less than 30 milliliters per minute, takes magnesium supplements at home, or received both intravenous and oral magnesium supplementation within 24 hours. Average increase in serum magnesium will be calculated and compared between the different administration routes and doses. A student's T-test will be used with an alpha level set at 0.05 to determine any statistically significant differences.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-196

Poster Title: Evaluating factors contributing to unplanned readmissions for medication therapy management interventions in a community hospital

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Purpose: Unplanned hospital readmissions are common and costly and current risk scoring tools are not oriented towards clinical pharmacist interventions. The objective of this study is to evaluate the associations between medication-related parameters and unplanned 30-day, 3-month, and 6-month readmissions. The results from this study will be used to develop a practical prediction tool that identifies patients who may benefit from medication therapy management pharmacy services.

Methods: This retrospective, cohort study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who were admitted to Carle Foundation Hospital between January 2013 and June 2016 for heart failure exacerbation, acute myocardial infarction, chronic obstructive pulmonary disease exacerbation, or pneumonia. Independent associations between each medication-related risk factor and 30-day, 3-month, and 6-month readmissions will be determined using bivariate and multivariate regression analysis. Medication-related risk factors will include specific diagnoses in past medical history, patient demographics, insurance information, number of medications on admission and at discharge, length of stay, time since last readmission, specific classes of medications on admission and discharge, number of pharmacies on file, social work consults, and if the patient is without a primary care provider on file. All patient identifiers will be removed prior to the analysis.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-197

Poster Title: Impact of a pharmacist-run smoking cessation clinic on reduction in cigarette use

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Purpose: Cigarette smoking is the primary cause of preventable death and morbidity in the United States and is highly addictive. Smoking is linked to lung cancer, heart disease, and many other comorbidities. Between 1965 and 2014 over 20 million people died from smoking-related causes. Given the importance of smoking cessation on patient outcomes, the objective of this study is to evaluate the efficacy of a pharmacist-run smoking cessation clinic. The primary outcome is to determine the rate of cigarette use reduction in patients attending a smoking cessation clinic at a community teaching hospital.

Methods: This study is a retrospective cohort chart review of patients who attended Mercy Hospital's outpatient smoking cessation clinic between July 2014 and August 2016. Patients will be evaluated through review of their electronic medical records. Patients will be included if they are at least 18 years of age, enrolled in the smoking cessation clinic, and completed two or more counseling visits with a pharmacist. Patients will be excluded if they are pregnant or had uncontrolled hypertension, arrhythmias, or other chronic diseases at the time of referral. Data collected will include percentage of patients who quit smoking, time to complete smoking cessation, number of visits to stop smoking, number of visits within the first three months, and predictive factors for quitting. A threshold of less than five cigarettes per day will be considered clinically significant; however, any reduction in cigarette use will be recorded.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 9-198

Poster Title: Implementation of a pain scorecard and its impact on hospital-wide pain scale administration and reassessment timing compliance

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Purpose: The objective of this study is to develop a pharmacy managed scoring tool to improve nursing compliance with as needed pain scale medication administrations and reassessment timing. The appropriate pain medication selection based on the patient's reported pain level is critical in providing optimal patient care. Nursing interpretation of as needed pain qualifiers and relating the patient's reported pain score is within the nursing scope of practice; however, many factors may limit compliance. Implementation of the scorecard allows for trending weekly pain scale administration and reassessment timing data to assess improvement in hospital-wide compliance.

Methods: After institutional review board approval, the data that will be collected from the electronic medical record system include as needed pain medication administrations, reported pain scores, and timing of reassessments. This information will be compiled into an electronic database that will be modified to allow for a summary scorecard to be sent to each nursing manager with the overall hospital-wide compliance, further broken down into department and user specific information. Compliance with as needed pain medication administrations and pain reassessment timing will be compared as pre- and post- scorecard implementation with pain scale compliance rates evaluated at six months.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-199

Poster Title: Impact of provider education on methacillin-resistant Staphylococcus aureus nasal swabs and antibiotic de-escalation

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Purpose: To evaluate the influence of provider education regarding methacillin-resistant Staphylococcus aureus (MRSA) nasal swabs as an antimicrobial stewardship instrument to assist with the de-escalation of empiric vancomycin coverage in the intensive care unit (ICU). The primary outcome of the study is to assess the days of empiric vancomycin therapy after ICU providers receive live education regarding the negative predictive value of the MRSA nasal swab. Secondary outcomes will include positive and negative predictive values of MRSA nasal swabs at this institution, development of MRSA pneumonia, provider acceptance of the intervention, and patient mortality.

Methods: This is a quasi-experimental pilot study to assess the impact of provider education regarding MRSA nasal swab results and subsequent de-escalation of empiric vancomycin coverage. The initial phase of the study will consist of a retrospective electronic medical record review, from December 1, 2014 to February 28, 2015, to identify and gather data from ICU patients with pneumonia. This retrospective data will provide the institutions pre-education time to de-escalation of empiric vancomycin coverage. The intervention phase will focus on the education of ICU providers. Provider education will consist of live presentations of the literature regarding the predictive value of MRSA nasal swabs concerning MRSA pneumonia. The providers will receive a post-presentation survey to gauge their initial response to the education and assess the probability of implementing what they learned into practice. The final stage of the study will be collecting data prospectively, post-provider education from December 1, 2016 to February 28, 2017, to see if the education provided has any impact on empiric vancomycin de-escalation. Data collection will include baseline patient characteristics,

respiratory cultures (including a Gram stain), pneumonia classification, time until nasal swab result, mortality, service de-escalating antibiotics, and development of MRSA pneumonia after discontinuation of MRSA antibiotic coverage. Data collected will remove personal identifiers to maintain patient confidentiality. The study is currently pending Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-200

Poster Title: The impact of a nursing driven sedation protocol in mechanically ventilated intensive care unit patients

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Purpose: The purpose of this study is to evaluate the impact of a nursing driven sedation protocol on outcomes of patients receiving mechanical ventilation. A previous institutional sedation protocol and drug utilization review found that patients who received sedation while mechanically ventilated had inappropriate documentation of both the medications utilized and associated sedation scores. A nursing driven sedation protocol was subsequently developed and implemented in July 2016 to improve utilization of sedative agents and improve patient outcomes. Additionally, this study will also evaluate compliance with the sedation protocol and nursing algorithms.

Methods: The retrospective study is currently pending Institutional Review Board approval. Patients mechanically ventilated in the Intensive Care Unit (ICU) from July 1, 2016 to January 31, 2017 will have a chart review performed to assess several factors related to the patient's sedation. Baseline characteristics collected will include patient age, weight, gender, and admission date. Patients must be eighteen years or older receiving sedation while mechanically ventilated in a critical care area to be included. Patients undergoing targeted temperature management or receiving ventilation less than 24 hours will be excluded. The primary objectives will be length of ICU stay and duration of mechanical ventilation, both reported as average number of days. Data will then be compared to the previous institutional quality initiative to assess the impact of the newly implemented protocol. Secondary measures evaluated will include utilization of the sedation medication and sedation vacation order sets, documentation of Richmond Agitation Sedation Scale (RASS) goal and RASS scores, appropriateness of alterations in sedation agents (if applicable), and documentation of delirium assessments. Appropriateness of sedation agents and dosing alteration will be assessed based on a nursing algorithm for sedation developed as part of the protocol and according to the

ordered physician goal RASS score. In order to meet power of 80%, a total of at least 376 patients must be included in the review.

Results: In process

Conclusion: In process

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 9-201

Poster Title: Assessing the efficacy of multimodal analgesia protocol in orthopedic surgical patients in a community hospital

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Purpose: Traditionally, high-dose opioids have been used to manage postoperative pain after joint reconstruction. Adverse effects of opioids can impair recovery, lead to medical complications, and potentially increase length of stay (LOS). The principal of multimodal analgesia therapy is to use interventions that target several steps of the pain pathway, allowing more effective pain control with fewer side effects. Recent literature suggests that multimodal analgesia protocols (MAP) decreases opioid consumption, increases patient satisfaction, and decreases LOS for orthopedic surgical patients. The objective of this study is to evaluate the efficacy and safety of a newly implemented MAP at Ingalls Memorial Hospital.

Methods: A single-centered, retrospective study was conducted to assess postoperative pain management for patients receiving protocol guided multimodal analgesia following orthopedic hip or knee surgery. Patients were included in this study if they were 18 years or older, had undergone total knee or total hip orthopedic surgery, and had normal renal function. A pre-implementation retrospective analysis was performed to obtain baseline pain score data, opioid consumption rates and adverse event reporting for postoperative orthopedic patients. The pre-implementation retrospective analysis was performed from September 1, 2016 to September 30, 2016. Following the implementation of the MAP, a retrospective chart review was performed for all total knee or total hip orthopedic surgery patients from October 1, 2016 to October 31, 2016. The following data was collected from all patients that met the inclusion criteria: patient age, gender, type of surgery, MAP was used, type and amount of opioids consumed, length of stay, numeric pain scores, adverse events from medications, and patient satisfaction. The primary outcome was the difference in total opioid consumption in morphine

equivalents. Secondary outcomes included the difference in numeric pain scores, adverse events related to opioids, and length of stay.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-202

Poster Title: Prospective analysis of proper personal protective equipment (PPE) use in chemotherapy administration

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Purpose: Although safe handling and administration of chemotherapy agents has improved nationwide over the years, a high number of oncology nurses are still contaminating treatment areas putting themselves as well as patients at risk. In response to this issue, the pharmacy department at a small community hospital with infusion centers has created a medication usage evaluation plan to help improve the safety of oncology nurses and patients. The purpose of this study will be to assess the proper use of PPE while oncology nurses are administering chemotherapy to cancer patients and making the necessary interventions to improve safety practices.

Methods: A multi-centered, prospective study of oncology nurses administering chemotherapy agents to cancer patients will be conducted. To ensure that the study will be up to current safety standards, a checklist was created based off of the 2016 OSHA Guidelines. Two pharmacists and one oncology nurse manager will evaluate the oncology nurses using this checklist. The checklist consists of: glove inspection, double gloving, using proper PPE, hand washing after removing gloves and PPE, proper donning and disposal of PPE and keeping beverages and food outside of the treatment area. The study will take place in three outpatient chemotherapy infusion centers as well as the oncology unit in the main hospital. After two months, the findings will be tallied from the checklists of all infusion centers. The primary outcome will be assessing the safety of the oncology nurses and patients using the tallies from all of the checklists. Secondary outcomes will be providing interventions (education, motivation and repetition) after the initial 2 months and evaluate again to assess for improvement in safety outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Evaluative Study

Session-Board Number: 9-203

Poster Title: Comparison of preventative strategies for contrast induced nephropathy in critically ill patients

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Purpose: Contrast induced nephropathy (CIN) is a serious complication which may progress towards end-stage renal disease (ESRD) and require dialysis with prolonged hospital stay. There is a paucity of data describing the optimal preventative strategy for CIN in the critically ill patient. Therefore, the objective of this study was to compare the efficacy of normal saline (NS) to sodium bicarbonate (BC) with or without N-acetylcysteine (NAC) for the prevention of CIN in critically ill patients exposed to iodinated radiocontrast.

Methods: This was a single-center, retrospective, Institutional Review Board (IRB) approved study conducted in an urban tertiary care academic medical center. The primary outcome was the development of acute kidney injury (AKI), as defined by the RIFLE criteria, within 48 hours of radiocontrast administration. Secondary outcomes were the development of AKI requiring hemodialysis, intensive care unit (ICU) length of stay (LOS) and hospital LOS. Patients 18 years of age or older and receiving either NS or BC with or without NAC before and after iodinated radiocontrast administration were included in this study. Any of the following were considered exclusion criteria: a serum creatinine (Scr) greater than or equal to 8 mg/dL, ESRD, history of dialysis or hemofiltration, allergy to NAC, AKI, and pregnancy. Patients could not be included if they received iodinated radiocontrast within 10 days of the initial inclusion event. The initial IRB approved list of patients was screened for administration of radiocontrast during the three year study interval. Those patients identified as receiving radiocontrast during the study were further evaluated for receipt of one of four regimens to prevent CIN (NS, BC, NS plus NAC, and BC plus NAC).

Results: Seventy-three patients met inclusion criteria and were included in this analysis: 38 patients (NS group), 16 patients (BC group), 3 patients (NS plus NAC group), and 19 patients (BC plus NAC group). Baseline characteristics were similar among groups, with one exception. Baseline Scr was highest in the BC plus NAC group ($p = 0.04$). The incidence of AKI was similar among groups (10.5 percent, 6.3 percent, 0 percent, and 0 percent in the NS, BC, NS plus NAC, and BC plus NAC groups, respectively ($p = 0.281$)). In addition, there was no difference in the need for dialysis post-contrast administration ($p = 0.706$), ICU LOS and hospital LOS ($pICU = 0.67$, $phospital = 0.96$).

Conclusion: Our study concluded that NS was as effective as BC with or without NAC in the prevention of CIN in critically ill patients. Information gained from this study can guide agent selection of preventative CIN strategies in times of drug shortages and drug supply interruptions. Further studies are needed to validate this conclusion in specialized ICU populations.

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-204

Poster Title: Evaluation of a lifetime dose for platinum chemotherapeutic agents: a retrospective review

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Purpose: Platinum based antineoplastic agents are commonly used for the treatment of a variety of cancers. With the increased use of platinum agents, there is an increased risk of patients developing hypersensitivity reactions. Recently published literature suggests a higher incidence of hypersensitivity reactions when a patient is given greater than 7 cycles of carboplatin or 6 cycles of oxaliplatin. The purpose of this study is to identify a potential lifetime dose of carboplatin and oxaliplatin and to determine potential risk factors for these hypersensitivity reactions.

Methods: This is a retrospective chart analysis of all patients being treated with platinum agents from 2008 to 2016. This study will compare patients who developed a hypersensitivity reaction to a control group that did not develop a hypersensitivity reaction. All patients who received platinum based antineoplastic agents will be identified through Cerner computer system. Patients will be excluded if they meet one of the following criteria: less than 18 years of age, received greater than 9 cycles of oxaliplatin, received greater than 4 cycles of carboplatin, or transferred from an outside facility for continuation of care. Data to be collected and analyzed includes age, gender, weight, presence of preexisting allergies, indication for treatment, renal function, prior or current exposure to platinum containing agents, chemotherapy dosing regimen, presence of a hypersensitivity reaction, use of pre-medications for mitigation of treatment reactions, number of attempts or trials before determining treatment termination, and total dose of platinum agent received. Patients will further be categorized based on total dose received and evaluated for potential risk factors for development of hypersensitivity reactions. The primary outcome will be determined by the

average total dose at which the majority of patients experience a hypersensitivity reaction. Statistical methods to be determined.

Results: In progress

Conclusion: In progress

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-205

Poster Title: Conversion of patients from insulin U-100 to U-500 and the effect on glycemic control

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Purpose: Insulin U-500 is prescribed frequently due to rising rates of insulin resistance. U-500 has safety issues and lacks consensus on the method of converting patients from U-100 to U-500, which may lead to under or over treatment. Common methods include 1:1 conversion of the total daily dose of U-100 to U-500 for patients with hemoglobin A1c (HbA1c) greater than or equal to 8 percent, and dose reduction of 10-20 percent for patients with lower initial HbA1c. This study will identify patients converted from U-100 to U-500 and evaluate the safety and efficacy on glycemic control in type 2 diabetic patients.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients converted from insulin U-100 to U-500. The following data will be collected: age, gender, weight, onset of diabetes, glucose level, HbA1c and method of U-100 to U-500 insulin conversion. Chart and patient-reported hypoglycemia, defined as blood glucose less than or equal to 70 mg/dl, and hyperglycemia, defined as pre-prandial blood glucose levels greater than 130 mg/dl and postprandial blood glucose levels greater than 180 mg/d, will also be identified. Provider documentation will be reviewed to determine if alternate etiologies of hypoglycemia and hyperglycemia can be identified. Once the data has been collected patients will be categorized by method of conversion and then compared by rates of hypoglycemia, in range blood glucose values, and hyperglycemia.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-206

Poster Title: Implementation and evaluation of public health outreach events as resident teaching experiences

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Purpose: Mitigating negative effects of health disparities is a goal of public health initiatives. Offering medication reviews through outreach events is one approach to achieve this goal. Such events may be ideal for pharmacy residents to gain additional teaching opportunities with the participation of fourth year pharmacy students. The objective of this study is to assess feasibility of implementing outreach events, and to evaluate their impact on the public through evaluation of interventions made, as well as through patient reported satisfaction of these events. There is also an opportunity to determine if a benefit exists in near-peer teaching.

Methods: Medication review events will be scheduled at least monthly in a hospital-based outpatient pharmacy. Prior to each event, residents will lead a topic discussion for students on conducting a medication review, providing an opportunity to answer questions.
Patients who consent to a pre- and post-survey will be included in data analysis. Patients who do not consent can take part in this service yet will not be included in analysis. The pre-survey will assess number of medications, if the patient receives help with their medications, use of an adherence aid, ability to read prescription labels, and self-reported understanding of medications. During the review, students will document patient knowledge of the following information for each medication: indication, dose, instructions for use, and associated adverse effects. Patients will be educated on unknown information. Upon completing the review, the post-survey will again assess patient self-reported understanding of their medications as well as overall satisfaction with the event.
Following each event the resident will debrief with students, answering questions or concerns. A survey will then be administered to gauge students' experience with near-peer teaching. Resident preparedness and ability to answer questions, as well as student comfort level with said resident will be assessed.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-207

Poster Title: Evaluation of continuous infusion anti-hypertensives in the intensive care unit

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Purpose: Hypertensive emergency is a category of hypertensive crisis defined as blood pressure (BP) greater than 180/120 mm Hg with end-organ damage. It requires intravenous anti-hypertensive therapy to lower the mean arterial pressure by 20-25 percent within 60 minutes, avoiding hypotension which may compromise organ perfusion. Postoperative hypertension in cardiac surgery also requires BP control, as it is associated with increased morbidity, myocardial ischemia, and postoperative bleeding. The main objective of this drug evaluation is to compare the efficacy, safety, and relative cost of continuous infusion clevidipine, nicardipine, nitroprusside, or labetalol when used for hypertensive emergency and postoperative cardiac surgery.

Methods: This is a retrospective chart review of patients receiving continuous infusion clevidipine, nicardipine, nitroprusside, or labetalol for treatment of hypertensive emergency and acute hypertension in cardiac surgery patients. Adult patients admitted to the intensive care units at our institution from May 1st, 2016 to June 30th, 2016 will be included. Patients who were initiated on therapy in a pre-procedural setting will be excluded. Demographic data collected will include age, weight, body mass index, and ordering service. Clinical outcomes to be assessed include average time required to achieve pre-specified BP goals, duration of therapy, and the incidence of hypotension and bradycardia. For each medication, the mean and the maximum dose received will be measured. Proper discontinuation of continuous infusion agents will be evaluated with successful conversion to an oral agent defined as transition without the requirement of a continuous infusion within 24 hours of conversion. A brief cost analysis will also be performed. Data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-208

Poster Title: Medication use evaluation of liposomal bupivacaine in bariatric surgery patients

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Purpose: Liposomal bupivacaine (Exparel) is a novel, sustained release formulation of bupivacaine hydrochloride. Several clinical trials in colorectal surgery have demonstrated that infiltration with liposomal bupivacaine at the end of the procedure reduced post-operative pain, opioid use, and hospital length of stay. Liposomal bupivacaine was approved at Loyola University Medical Center, a 569-bed tertiary care hospital, for use in bariatric surgery in March 2016. The purpose of this medication use evaluation is to compare post-operative opioid usage and length of stay in bariatric surgery patients pre- and post-implementation of liposomal bupivacaine.

Methods: This is a retrospective cross-sectional analysis comparing 50 bariatric surgery patients who received liposomal bupivacaine intra-operatively between April and July 2016 to 50 similar patients who did not receive liposomal bupivacaine between December 2015 and February 2016. Information to be collected and compared includes patient demographics, comorbidities, length of stay, time to first post-operative opioid dose, mean post-operative pain scores, and cumulative post-operative opioid consumption in morphine equivalents.

Results: Data collection in progress

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-209

Poster Title: Efficacy of a pharmacist-driven warfarin protocol from early implementation to current practice

Primary Author: Vishali Amin, Loyola University Medical Center, IL; **Email:** vpatel022@gmail.com

Additional Author (s):
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Purpose: Warfarin is challenging to dose and monitor due to its unpredictable effects on the international normalized ration (INR), drug interactions and narrow therapeutic index. Pharmacist-driven warfarin management has been shown to increase the number of therapeutic INRs and decrease the time needed to reach therapeutic goal. Though studies have analyzed the efficacy of warfarin dosing pre and post-implementation of a pharmacist-driven protocol, none have evaluated the impact on therapeutic outcomes after initiation. This study was designed to evaluate whether pharmacist achievement of therapeutic INR has improved since initial implementation of pharmacist-managed warfarin anticoagulation.

Methods: A pharmacist-managed warfarin service was implemented for pharmacists to dose warfarin and monitor INR upon provider referral. To determine the efficacy of this protocol, we completed a retrospective chart review of 200 patients. We randomly selected 100 patients from April 2014 and May 2016, representing early implementation and current practice respectively. Age, gender, weight, baseline INR, need for INR reversal, reversal agent administered, primary service and hospital location were recorded. Patient charts were reviewed to determine whether the INR was within goal at consult, if patient was warfarin naive, anticoagulation indication, INR goal, parenteral anticoagulation, low vitamin K diet and whether the INR was within goal at discharge. INR chronology was collected daily. This included the date, INR, dose administered, whether INR was therapeutic, dose adjustment, need for INR reversal and reversal agent administered. The primary outcome measure was the percentage of patients with a therapeutic INR. Secondary outcomes included the incidence of an INR greater than 4 or less than 2, the incidence of rapid change in an INR (defined as an increase or

decrease greater than or equal to 0.5) and the incidence of clinically significant bleeding and thrombotic events.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-210

Poster Title: Evaluating the appropriate continuation of outpatient highly active antiretroviral therapy upon hospital admission at an academic medical center

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Purpose: Continuity of a patient's highly active antiretroviral therapy (HAART) is imperative in preventing deleterious consequences, such as furthering the development of Human Immunodeficiency Virus (HIV) resistance. While rates of HIV resistance development are highly variable, it has been reported that even a 24 hour gap in coverage may increase resistance rates. Prior studies have found that HIV-associated medication error rates upon hospital admission may be as high as 30 percent. In this evaluation, we explore the appropriateness of HAART regimens for HIV patients upon admission to an academic medical center.

Methods: This evaluation is a retrospective chart review of HIV-positive patients on HAART who were admitted at a suburban, academic medical center from September 2015 to September 2016. A review of electronic medical records was performed to identify patient admissions and obtain the following data: age, gender, ethnicity, prior to admission HAART regimen, inpatient HAART regimen ordered upon admission, route of administration and time to resuming HAART. The objectives of this review were to assess HAART medication error rates upon admission, including delays in restarting therapy. Causes of delay in resuming HAART or inappropriate ordering of HAART were examined, including non-formulary medications, administration route barriers and prescribing errors. Descriptive statistics will be used to analyze data, and results will be presented in poster format.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-211

Poster Title: Evaluation of the use of intravenous acetaminophen

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Purpose: Intravenous (IV) acetaminophen is FDA approved for fever reduction and management of mild to moderate pain, and moderate to severe pain in conjunction with opioids. IV acetaminophen was removed from formulary at our institution in 2014 due increased cost and lack of clinical benefit compared to alternate therapies. IV acetaminophen may be ordered as a non-formulary agent in patients who cannot tolerate oral or rectal medications, and when opioids and nonsteroidal anti-inflammatory drugs are contraindicated. This evaluation will characterize use and identify if opportunity exists to correct inappropriate prescribing, optimize use, and decrease costs.

Methods: This retrospective chart review will evaluate 100 patients who had non-formulary orders placed, and received at least one dose of IV acetaminophen from August 2015 to August 2016. Patients will be identified and data will be collected using the electronic medical record. The following data will be collected: patient demographics, dosing parameters (creatinine clearance, weight, and liver function tests), dose, duration of therapy, ordering service, and type of surgery if applicable. In addition, the use of other analgesic and antipyretic medications concurrently and within 48 hours of IV acetaminophen will be evaluated. All data will be collected without patient identifiers and will be stored securely. Descriptive statistics will be used to analyze data, and results will be presented in a poster format. Data analysis will include assessment of appropriate dosing, monitoring, and indication with regards to inability to use alternate analgesics or antipyretics. Amount of use in patients where there was no contraindication to formulary agents will be evaluated to identify areas for process improvement.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-212

Poster Title: Evaluating the efficacy of a weight adjusted dosing strategy for an unfractionated heparin nomogram

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Additional Author (s):
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Purpose: The purpose of this study is to evaluate the efficacy of a weight adjusted dosing strategy for an unfractionated heparin (UFH) nomogram in achieving and maintaining a therapeutic activated partial thromboplastin time (aPTT) in patients on an UFH infusion.

Methods: This nomogram provides UFH dosing and laboratory monitoring instructions to nurses for patients requiring therapeutic anticoagulation for atrial fibrillation or acute coronary syndrome. An aPTT between 55 and 75 seconds is considered therapeutic for this nomogram. Patients were excluded from the study if they were less than 18 years old, managed with an alternate aPTT goal previously within the encounter, or received less than 24 hours of continuous infusion. Data collection for each patient includes baseline demographics, baseline aPTT, administration of initial and intermittent heparin bolus doses, duration of therapy, all aPTT values during therapy, reasons and duration of stoppage, and incidence of protocol deviation. The primary endpoint of this study is the time to first therapeutic aPTT. Secondary endpoints include the average percentage of time patients remained above, below, or within the therapeutic range and the average number of protocol deviations per patient. A total of 175 patients managed with the UFH nomogram were screened, and 100 patients met the study inclusion criteria. Data has been collected on 50 patients to date. Data collection and analysis is ongoing.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-213

Poster Title: Assessment of the safety and efficacy of an inpatient pharmacist managed warfarin dosing protocol

Primary Author: Chris Mahaffey, Memorial Medical Center, IL; **Email:** csm11591@gmail.com

Additional Author (s):
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Purpose: Implementing a pilot pharmacy warfarin dosing service at our hospital will provide valuable information as to the feasibility of a full scale implementation of the service in the future. This dosing service trial will allow pharmacy management to assess if a full scale version would 1) be physically feasible with the current resources, 2) result in improved efficacy and safety outcomes for the patient, and 3) result in cost savings for the hospital through pharmacy management of a high risk medication.

Methods: This study is currently under review by the Institutional Review Board as a quality improvement project. A pharmacy managed warfarin dosing protocol has been created and approved by the Pharmacy and Therapeutics committee which establishes the warfarin dosing guideline for the pharmacists. Patients who are referred to the warfarin dosing service will be assessed for inclusion into one of two treatment populations: new start warfarin therapy or maintenance warfarin therapy. Based on the inclusion and exclusion criteria for these two groups, patients will be case matched with patients who previously had their warfarin managed by a physician before the initiation of the dosing service trial. This will allow comparison of outcomes between pharmacist managed and physician managed warfarin therapy. The primary efficacy objectives for the new start warfarin group include time to therapeutic INR and percent time in goal INR range. The primary objective for the maintenance warfarin group is percent time in goal INR range. Secondary objectives include length of stay, readmission within 30 days, number of supratherapeutic INRs greater than or equal to 4, number of supratherapeutic INRs greater than or equal to 4 requiring reversal, and number of bleeding events requiring discontinuation of warfarin.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-214

Poster Title: Comparison of nicardipine and clevidipine for the management of hypertension in acute stroke

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Additional Author (s):
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Purpose: Rapid reduction to goal blood pressure (BP) reduces the risk of brain injury in acute stroke patients, however, there is a lack of evidence or guideline recommendation for a preferred antihypertensive agent. Clevidipine and nicardipine have both been studied as reliable agents for use in stroke, but no studies have compared these two directly. The purpose of this study is to evaluate the use of clevidipine and nicardipine for treatment of hypertension in patients with an acute stroke.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review from 3/17/2015 to 9/30/2016 will identify patients 18 years and older with intracranial hemorrhage, acute ischemic stroke, and subarachnoid hemorrhage treated with nicardipine or clevidipine for blood pressure (BP) reduction. Patients will be excluded if on dialysis or diagnosed with traumatic brain injury or intracranial neoplasm. The following baseline characteristics will be collected: age, gender, ethnicity, Acute Physiologic and Chronic Health Evaluation (APACHE) score, Glasgow Coma Scale, stroke type, family history of stroke, transient ischemic attack, hypertension, blood pressure, heart rate, serum creatinine, computed tomography (CT) scans, electrocardiogram, and medications. Data will be recorded without patient identifiers and maintained confidentially. Co-Primary outcomes include achievement of the care team defined BP goal at 1 and 6 hours post therapy initiation. Secondary outcomes include: composite in-hospital death, 30 day readmission, rebleeds on 24 hour CT scan, conversion from ischemic to hemorrhagic stroke on 24 hour CT, and hematoma expansion in the hemorrhagic subset. The following data will also be collected: length of intensive care unit stay, length of hospital stay, time to goal BP, time spent in goal BP,

maximum and minimum systolic BP during treatment, BP range during treatment, the need for additional intravenous antihypertensives, and reported adverse effects.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-215

Poster Title: Implementation of an antimicrobial stewardship order set for the treatment of Clostridium difficile infection in hospitalized patients

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Purpose: In 2011, half a million infections were caused by Clostridium difficile (C. difficile) in the United States. Approximately 83,000 patients experienced at least one recurrence and 29,000 expired within 30 days of the initial diagnosis. Treatment of Clostridium difficile infection (CDI) is based on clinical data and the patient's history of CDI. Patients are often incorrectly stratified based on disease severity and inappropriately treated leading to recurrent infections. The purpose of this study is to identify discrepancies in the stratification and treatment of CDI in hospitalized patients before and after the implementation of a standardized antimicrobial stewardship order set.

Methods: This study will retrospectively evaluate compliance with Infectious Diseases Society of America (IDSA) guidelines on the prescribing of antimicrobials for CDI before and after the implementation of a C. difficile order set. Two patient groups will be retrospectively evaluated. The first group will be analyzed before implementation of the order set from May 1, 2016 to August 31, 2016. The second group will be analyzed after implementation of the order set from November 1, 2016 to February 28, 2017. Patients will be selected based on the date of the positive polymerase chain reaction (PCR) assay for C. difficile toxin. Patients will be included if they are greater than or equal to 18 years of age and have a new, confirmed clinical diagnosis of CDI with a positive PCR assay. Data collection will include: baseline demographics and characteristics, medication history, laboratory data, patient history of CDI, antibiotic regimen prescribed for the treatment of CDI, treatment outcomes, overall compliance with the order set, length of hospital stay, transfer to a higher level of care, colo-rectal surgery consult, infectious diseases consult, radiology studies, and probiotic use.

Results: N/A-research in progress

Conclusion: N/A-research in progress

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-216

Poster Title: Medication administration through enteral feeding tubes: a quality improvement project

Primary Author: Katherine Wang, Mount Sinai Hospital, IL; **Email:** katherine.wang@sinai.org

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Purpose: Administration of medications through enteral feeding tubes presents challenges to optimizing medication therapy. Poor administration practices have been linked to numerous patient care problems including clogging of feeding tubes, unpredictable drug-drug and drug-formula interactions, subtherapeutic drug levels, and patient death. In 2009, the American Society of Parenteral and Enteral Nutrition (ASPEN) released recommendations on administration of medications through feeding tubes. However, observational studies and nursing surveys have found that actual practice can significantly deviate from these recommendations. The initial step of this quality improvement project will assess current medication administration practices at this institution.

Methods: Nurses' technique for administering medications through enteral feeding tubes will be evaluated during an initial observation period from August through September 2016. An automated report of patients on tube feedings will be used to identify patients for observation. In addition to the observation period, a survey will be used to assess pharmacists' and nurses' baseline knowledge of proper medication administration practices. Data will be reviewed in collaboration with dietary services to identify the need for policy and procedure revisions, development of educational materials, and other interventions, if needed.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-217

Poster Title: Impact of ambulatory care pharmacy services on human immunodeficiency virus (HIV) patients with concomitant diabetes, hypertension, or both in a safety net clinic

Primary Author: Diebh Faraj, Mount Sinai Hospital Medical Center, IL; **Email:** diebh.faraj@sinai.org

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Purpose: Human immunodeficiency virus (HIV) as well as antiretroviral therapy have been associated with increased metabolic effects resulting in impaired glucose tolerance, insulin resistance, increased blood pressure and elevated lipids. In primary care clinics, studies have demonstrated improved blood pressure and hemoglobin A1c with ambulatory care pharmacy services. In addition, HIV ambulatory care pharmacists significantly improve medication adherence leading to immunologic and virologic suppression. The primary objective of this study is to evaluate the impact of an ambulatory care pharmacist on improving clinical outcomes of patients diagnosed with HIV and diabetes, hypertension or both in a low income urban community.

Methods: This study is a retrospective chart review of HIV patients with concomitant diabetes, hypertension or both from October 2014 to March 2017. This study will be submitted to the Institutional Review Board for approval. Historically, the infectious diseases clinic utilized physicians and case management services for medication counseling and adherence. In October 2015, pharmacy services were implemented to monitor and manage medication therapy. All patients 18 years of age and older with a documented diagnosis of HIV with diabetes or hypertension and were adherent to two or more clinic visits were included. The primary objective is to compare the number of HIV patients who achieve blood pressure and diabetes treatment goals before and after the implementation of an HIV ambulatory care pharmacist. The secondary objectives are to evaluate the correlation between virologic suppression and controlled diabetes, hypertension or both. Hemoglobin A1c and blood pressure goals will be in compliance with the American Diabetes Association and Eighth Joint National Committee (JNC

8) guidelines. The following data will be collected: HIV RNA, CD4 count, patient demographics, hemoglobin A1c, blood pressure, and types of pharmacist interventions.

Results: Data collection ongoing

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-218

Poster Title: Impact of pharmacists' role in care transitions and reduction of hospital readmissions.

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Purpose: Transitions of care (TOC) pharmacists reconcile medication regimens to ensure medication accuracy and patient safety upon discharge. The primary objective of this research project is to evaluate two TOC pharmacists' impact on the rate of patient readmission at a safety net hospital within the first 30 days post-discharge. Secondary objectives will look at interventions logged by a TOC pharmacist, and ability of the TOC pharmacist to reach the patient once discharged for follow-up at 7, 14, and 30 days.

Methods: This retrospective chart review will assess the impact of TOC pharmacists on 30-day readmission rates. Admitted patients who are counseled by the TOC pharmacist will be included into the study. The study will examine 30-day readmission rates with TOC pharmacists present compared to only having technician discharge services available.
Electronic medical records (EMRs) will be used to collect data. Patients will be identified for the research project via clinical interventions logged in the hospital's EMR. Data collection will include the following: TOC pharmacist interventions, the rate of readmission within the first 30 days post-discharge, and ability of a TOC pharmacist to reach the patient post-discharge at 7, 14, and 30 days.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-219

Poster Title: Gentamicin utilization for Gustilo-Anderson type III open fractures in trauma

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Purpose: Open fractures are commonly encountered in the trauma population. The Eastern Association for the Surgery of Trauma (EAST) has addressed the need for prophylactic antibiotics for Gustilo-Anderson type I, II, and III open-factures. Aminoglycosides are recommended for additional coverage of gram-negative pathogens in type III open fractures. The 2011 EAST guidelines do not make a definitive recommendation on traditional versus extended-interval aminoglycoside dosing and no recent publications have addressed dosing strategies. The objective of this study is to compare the efficacy and safety of traditional aminoglycoside dosing versus extended-interval dosing as prophylaxis in patients with type III open fractures.

Methods: This is a single-center, retrospective cohort study in patients who presented to the emergency department from January 1, 2009 through October 31, 2015 with a type III open fracture requiring the use of gentamicin. A gentamicin utilization report was generated to identify patients for inclusion in the study. Patients who received traditionally-dosed gentamicin were compared to those who received extended-interval dosing. The primary efficacy outcome was surgical-site infection within 1 year of injury. The primary safety outcome was acute kidney injury.

Results: Data collection is currently in progress.

Conclusion: Data collection is currently in progress.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-220

Poster Title: Safety and efficacy of inhaled nitric oxide in patients with acute respiratory distress syndrome

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Purpose: Acute respiratory distress syndrome (ARDS) is a clinical syndrome which can lead to respiratory failure and increased mortality. The management of ARDS consists of supportive care which includes treatment of underlying causes, prone positioning, mechanical ventilation and pharmacologic treatment. Inhaled nitric oxide (iNO) is a pulmonary vasodilator used in patients with severe hypoxemia. It has demonstrated significant improvement in oxygenation for a short period of time. The objective of this study is to review the safety and efficacy of iNO in adult medical intensive care unit patients with ARDS.

Methods: This is a retrospective, cohort study reviewing the use of iNO for patients admitted to the medical intensive care unit (MICU) between 2014 and 2016. The following data was collected via electronic medical record system: age, gender, weight, ICU and hospital length of stay, history of chronic respiratory disease, utilization of conventional therapy, vital signs, dose and duration of iNO, arterial blood gas, and mortality. The primary outcome measure is ventilator free days post-initiation of iNO. The secondary outcomes include change in partial pressure of oxygen in arterial blood (PaO2), PaO2/FiO2 ratio, mortality, and cost.

Results: n/a

Conclusion: n/a

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-221

Poster Title: Effects of reduced monitoring of low-dose ketamine infusions

Primary Author: Christine Kim, NorthShore University Health System, IL; **Email:** ckim4@northshore.org

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Purpose: Low-dose intravenous (IV) ketamine infusions have been shown to be safe and effective for adjunctive analgesia in chronic pain, neuropathic pain, bone metastases, sickle cell disease, and post-operatively, especially in patients with opioid tolerance. The dissociative anesthetic properties of low-dose ketamine provide pain control without causing respiratory depression. The most common adverse effects of low-dose ketamine infusions include sedation, visual disturbances, and CNS excitation characterized by delirium, agitation, hallucinations, and vivid dreams. This medication use evaluation will focus on this institution's expanded use of low-dose IV ketamine infusions without intensive care monitoring, and evaluate the effects of reduced monitoring.

Methods: This quality assurance evaluation is exempt from review by the Institutional Review Board. Through retrospective chart review all adults over 18 years of age who received low-dose IV ketamine infusions on general medical and surgical units between July 1, 2015 and June 30, 2016 will be identified. The following data will be collected: vital signs, duration of low-dose IV ketamine, requirements of change in acuity of care to an intensive care unit, discontinuation and dose reductions of ketamine due to intolerability of psychiatric adverse effects including delirium, agitation, hallucinations, irrational behavior, confusion, vivid dreams, and sedation, peak dose of ketamine received, and Richmond Agitation and Sedation Scale scores. The primary objective will be to evaluate whether patients receiving low-dose IV ketamine infusions require a change in acuity of care, defined as a transfer to the intensive care unit. Secondary objectives include evaluating hemodynamic changes during low-dose IV ketamine infusion and evaluating discontinuation of IV ketamine infusion due to psychiatric adverse effects. Descriptive statistics will be used to evaluate data.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-222

Poster Title: Evaluation of continuous opioid infusion for post-operative pain management in infants

Primary Author: Quang Phan, NorthShore University Health System, IL; **Email:** qphan@northshore.org

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Purpose: Neonates in the intensive care setting undergo numerous painful procedures. Inadequately treated pain can lead to hemodynamic instability, neuro-developmental delays, and behavioral delays. Opioid therapy remains first line for systemic pain control, with concerns for tolerance, withdrawal, and developmental delays associated with its use. In January 2016, the American Academy of Pediatrics (AAP) recommended intravenous (IV) acetaminophen as an adjunct agent for systemic pain management and opioid requirements reduction. This evaluation will assess the continuous opioid infusion requirements prior to the addition of IV acetaminophen in June 2016; data collected will be used in a future analysis for comparison purposes.

Methods: This evaluation is exempt from review by the Institutional Review Board due to its scope as a quality assurance assessment. A descriptive, retrospective chart review will be conducted for infants from January 1st, 2014 - June 31st, 2016 who received continuous opioid infusion post-operatively. A patient list will be generated of all patients who received continuous opioid infusion, and the following data will be collected: gestation age, date of birth, birth weight, gender, surgical procedure, post menstrual age at time of procedure, cumulative opioid dose in the first 48 hours post-operation, overall dose for the entire duration of the therapy, and total duration of opioid therapy. The secondary endpoint is to evaluate the average N-PASS score in the first 48 hours post-operation. All patient data will be de-identified and maintained confidentially. Descriptive statistics will be used for analysis of data

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-223

Poster Title: Development and implementation of an antimicrobial stewardship program within a multisite health system

Primary Author: Jae Shin, NorthShore University HealthSystem, IL; **Email:** shin.jaer@gmail.com

Additional Author (s):
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Purpose: The Centers for Medicare and Medicaid Services (CMS) proposed new requirements for hospitals to implement an antimicrobial stewardship program (ASP) to help reduce inappropriate antimicrobial use and resistance. Multiple studies have demonstrated that an antimicrobial stewardship program could potentially reduce antibiotic use by 22-36 percent and produce an annual savings of approximately 200,000-900,000 dollars based on hospital size. Other benefits associated with a stewardship program include reduction in multi-drug resistant pathogens and Clostridium difficile infections. This project was initiated to determine the impact on antibiotic usage and cost savings from an antimicrobial stewardship program.

Methods: An interdisciplinary team consisting of three infectious disease (ID) physicians, one infectious disease pharmacist, two hospital administrators, pharmacy director, and a pharmacy resident worked together to develop a project plan to initiate an antimicrobial stewardship program. The physicians and pharmacist worked together to create a checklist of responsibilities based on the CMS proposal. After the responsibilities were complied, it was determined that 1.4 full-time equivalent (FTE) ID physicians, two FTE ID pharmacists, and a part-time data analyst were required to fulfill the CMS recommendations. The pharmacy resident's role was to perform literature research and create a business plan to predict the potential costs and savings from initiating a stewardship program. After extensive literature search, it was concluded that there was a potential for a 15 percent cost savings in the first year. There was also potential for greater than one million dollars in overall savings in three years after incorporating costs for employees with benefits. In order to track antibiotic usage and potential savings, a retrospective analysis was initially conducted to determine the baseline of antibiotic use and expenditure. After the implementation period of six months, we plan to collect data within the same time period as the baseline data to determine the benefits of an

ASP. This project is exempt from the institutional review board as it is a performance improvement project.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-224

Poster Title: Impact of perioperative administration of intravenous multiple electrolytes solution on postoperative hyponatremia in total joint replacement patients

Primary Author: Rachel Bruns, NorthShore University HealthSystem, IL; **Email:** rbruns@northshore.org

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Purpose: Hyponatremia is associated with risk of perioperative morbidities in orthopedic surgical patients. In attempt to reduce occurrence of postoperative hyponatremia, a multiple electrolytes solution containing 140 milliequivalents per liter of sodium was selected to be administered perioperatively to orthopedic surgical patients in place of a fluid containing 130 milliequivalents per liter of sodium. The purpose of this review is to evaluate the incidence of postoperative hyponatremia in primary total knee or hip replacement patients before and after implementation of the multiple electrolytes solution protocol and to determine if an association exists between incidence of postoperative hyponatremia and duration of hospitalization.

Methods: This medication use evaluation qualifies as a quality assurance project and is exempt from Institutional Review Board approval. A retrospective chart review of patients at a community hospital aged 18 years and older who underwent primary total knee or hip replacement will be completed. Patients will be excluded if they have undocumented preoperative sodium levels and/or postoperative sodium levels within 48 hours following surgery. Patient lists will be generated from the electronic health record as a report. The following data will be collected: patient demographics, attending provider, ordering provider, authorizing provider, order number, order start and end dates, name of fluid and rate administered, time and date of fluid administration, discharge diagnosis, baseline serum sodium level, serum sodium levels on postoperative days one and two, admission and discharge dates, and time in days from postoperative day zero to discharge date. Postoperative hyponatremia will be defined as a documented serum sodium level less than 135 milliequivalents per liter within 48 hours following surgery. Inferential statistics will be used to

analyze data to determine if a difference in incidence of postoperative hyponatremia exists between groups.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-225

Poster Title: Evaluation of ketamine dosing and monitoring for procedural sedation and analgesia in the emergency department

Primary Author: Katie Johnson, NorthShore University HealthSystem, IL; **Email:** kjohnson4@northshore.org

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Purpose: Procedural sedation and analgesia (PSA) is used to produce amnesia, anxiolysis, and analgesia to help patients tolerate procedures. Ketamine is an antagonist of N-methyl-D-aspartate receptors in the central nervous system that produces analgesia and dissociation from external stimuli. These unique pharmacologic properties have made it a popular medication for PSA in both adult and pediatric patients. Potential side effects of ketamine include hypertension, hypotension, tachycardia, emergence delirium, and respiratory depression. This evaluation will assess compliance with documentation of monitoring parameters, adverse drug reactions, and dosing of ketamine for PSA in a community health system emergency department (ED) setting.

Methods: A retrospective chart review of patients who received ketamine in the four emergency departments of a community health system between July 1, 2013 and June 30, 2016 will be conducted. Patients who received ketamine in the ED will be randomized and 100 charts will be reviewed. This medication use evaluation is for quality assurance and is exempt from Institutional Review Board approval. Patients aged 3 months and older who received ketamine for PSA by intravenous or intramuscular route will be included. Patients who received ketamine by continuous infusion or for the indications of rapid sequence intubation or analgesia will be excluded. The following data will be collected: patient weight; age; type of procedure; ketamine dose(s) and route; other sedatives administered in addition to ketamine; monitoring parameters, including heart rate (HR), blood pressure (BP), respiratory rate (RR), oxygen saturation, Aldrete score, pain assessment, and loss of consciousness; timing of vital sign assessment and documentation; and adverse drug reactions, such as emergence delirium. The primary objective will be percentage of patients with complete assessment and documentation of monitoring parameters at specific times pre-, intra-, and post-procedure. Secondary

outcomes will evaluate adult and pediatric dosing, and adverse drug reactions, including changes in BP, HR, and RR. Descriptive statistics will be used to analyze the data.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-226

Poster Title: Impact of pharmacist intervention on intravenous acetaminophen use at a community health system

Primary Author: Hannah DeLuna, NorthShore University HealthSystem, IL; **Email:** hdeluna@northshore.org

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Amber Clouse

Purpose: In November 2010, the FDA approved the use of intravenous (IV) acetaminophen (Ofirmev) for pain and fever management. It is commonly used for patients who are unable to tolerate oral or rectal medications; however, its place in therapy is often questioned due to its high cost. Historical data from a four-hospital community health system suggests that use of IV acetaminophen remains high despite the implementation of an institutional guideline. The objective of this evaluation is to determine the impact of pharmacist-led intervention on IV acetaminophen use when compared to the historical data.

Methods: This evaluation is a quality assurance project exempt from review by the Institutional Review Board. Daily reports will be generated Monday through Friday from September 8, 2016 until November 2, 2016 to identify patients with orders for IV acetaminophen. Patients less than 18 years old will be excluded from review. Pharmacists assigned to patients who have received two or more doses of IV acetaminophen will determine whether its use is appropriate based on the institutional guideline and whether the prescriber should be contacted to recommend an alternative medication. A chart review will be conducted during this period, and the following data will be collected from the electronic medical record: age, gender, hospital, ordering provider service, total number of hours with nothing by mouth status while hospitalized, and number of IV acetaminophen doses administered. This data will be compared to existing data obtained from electronic reports from September 1, 2015 through August 31, 2016 by calculating the following: average number of IV acetaminophen doses administered per patient throughout the health system and for each hospital as well as the percentage of patients who received two or fewer doses of IV acetaminophen. Additionally, the average number and percentage of IV acetaminophen doses administered per patient for each service

will be calculated for the intervention group. Inferential statistics will be used to evaluate data collected for these indicators.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-227

Poster Title: Evaluation of ferumoxytol utilization within a health system

Primary Author: Chalsea Aiwohi, NorthShore University HealthSystem, IL; **Email:** aiwohic@gmail.com

Additional Author (s):
Alice Kim

Purpose: Ferumoxytol is an iron salt used for the treatment of iron deficiency anemia in patients with chronic kidney disease (CKD). It is a high cost intravenous iron product that is frequently prescribed. The objective of this evaluation is to assess the utilization of ferumoxytol, by evaluating the number of patients receiving at least two doses of ferumoxytol treatment, the number of patients with an appropriate timing of 3 to 8 days between doses, and the number of patients being treated for the indication of CKD anemia within a health system.

Methods: A retrospective chart review of patients who received two or more doses of ferumoxytol between January 2015 to August 2016 from all hospital sites, outpatient clinics, and dialysis centers within a health system will be conducted. The electronic medical record system will be used to identify patients receiving 2 or more doses of ferumoxytol. The following data will be collected: medication name, medication dose, sex, age, ordering number, ordering date, authorizing provider, ordering service, patient care unit, site, dosing frequency, and indication for drug use. The primary indicator is defined as the percent of patients who received the appropriate number of doses, timing between doses, and indication of CKD anemia. Each component of the primary indicator will also be evaluated separately. Descriptive statistics will be used for this evaluation. This is a quality assurance evaluation, and is exempt for approval from Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-228

Poster Title: Evaluation of the usage of epoetin alfa for inpatients with anemia of chronic kidney disease

Primary Author: Sarah Klembith, NorthShore University HealthSystem, IL; **Email:** sklembit@northshore.org

Additional Author (s):
Dipa Patel

Purpose: Erythropoiesis-stimulating agents (ESAs) are standard of care for treatment of anemia of chronic kidney disease (CKD). These agents have been associated with an increased risk of death, serious cardiovascular reactions, and stroke when administered to target hemoglobin (Hgb) levels greater than 11 grams per deciliter. Therefore, the lowest dose should be used. Currently, guidelines are not available for the use of ESAs for anemia of CKD in the inpatient setting. The objective of this medication use evaluation is to describe the usage of epoetin alfa in anemia of CKD for inpatients at a 4 hospital community health system.

Methods: This retrospective electronic chart review will include inpatients at least 18 years of age who received a dose of epoetin alfa for anemia of CKD between June 1, 2015 and May 31, 2016. The results will be used for quality improvement; therefore, the project is exempt from review by the Institutional Review Board. Data to be collected from medical records include: patient age, sex, actual body weight, hospital site, indication, initial dose administered, prescriber, dialysis schedule and type, Hgb level and date prior to initial epoetin alfa administration, and date and dose of previous outpatient epoetin alfa administration. The primary endpoint is the percentage of initial epoetin alfa orders given for an appropriate indication of anemia of CKD, at an initial dose of 20 to 100 units per kilogram, and with a Hgb less than 12 grams per deciliter. Secondary endpoints include percentage of initial epoetin alfa orders administered: at 20 to 50 units per kilogram, at 51 to 100 units per kilogram, to dialysis patients, to non-dialysis CKD patients, to patients with Hgb less than 12 grams per deciliter, and to patients who had a documented outpatient epoetin alfa dose administered within previous 7 days. Also, percentage of patients with the same epoetin alfa inpatient dose as outpatient dose received within previous 7 days. Descriptive statistics will be used to evaluate data.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-229

Poster Title: Evaluation of tirofiban renal dosage adjustment in the inpatient setting at a four hospital community health system

Primary Author: Erik LaChance, NorthShore University HealthSystem, IL; **Email:** elachance@northshore.org

Additional Author (s):
Laura Nasca

Purpose: Tirofiban requires an adjustment of the maintenance infusion dose for patients with a creatinine clearance less than or equal to 60 milliliters per minute. Studies have shown a propensity towards bleeding in patients with renal dysfunction who received standard tirofiban maintenance infusions. The objective of this evaluation is to determine if the maintenance infusion rate was properly adjusted for patients with decreased renal function who were initiated on tirofiban.

Methods: A retrospective chart review will be conducted on all patients initiated on tirofiban as inpatients between November 1st, 2015 and July 31st, 2016. This evaluation will assess for quality assurance, therefore, it is exempt from Institutional Review Board approval. Patients aged 18 to 89 years with coronary indication with or without percutaneous coronary intervention (PCI) initiated on tirofiban will be included. The following data points will be collected via electronic medical record and manual chart review: Gender, hospital/location, date of birth, prescriber, medical record number, time given, indication, body weight, height, indication, serum creatinine, creatinine clearance, concurrent anti-platelet medications, and dose. The primary objective will assess if the tirofiban maintenance infusion dose was properly adjusted based on creatinine clearance. A secondary objective will determine the average duration of tirofiban infusion in minutes. Descriptive statistics will be used to evaluate the data.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-230

Poster Title: Evaluation of a pharmacist-led initiative of intravenous levothyroxine use at a community health system

Primary Author: Kyle Brauer, NorthShore University HealthSystem, IL; **Email:** kbrauer@northshore.org

Additional Author (s):
Megan Britton

Purpose: Levothyroxine is available in intravenous (IV) and oral dosage forms. Oral dosage forms have shown to be more cost-effective than IV dosage forms due to difference in overall cost and decreased risk of cannula-related infections. IV doses are converted to oral based on the criteria of a functioning gastrointestinal tract, adequate absorption, and administration of other oral medications. This health system uses a 2:1 ratio when transitioning from an oral to IV route of administration. The objective of this evaluation is to assess the transition of IV levothyroxine to oral during a pharmacist-led initiative.

Methods: This prospective chart review will be exempt from review by the Institutional Review Board as it is a quality improvement project. All adult patients between September 16, 2016 and October 14, 2016 on Monday through Fridays with an active order for IV levothyroxine will be evaluated for transition to oral therapy based on the criteria of a functioning gastrointestinal tract, adequate absorption, and administration of other oral medications. Patients with a diagnosis of myxedema coma or patients determined to require IV levothyroxine via endocrinology recommendations will be excluded. Pharmacists in charge of patients deemed to have potential to transition to oral levothyroxine will be contacted via electronic health record messaging and prompted to evaluate patient for transition based on the above criteria. The following data will be collected: hospital name, hospital unit, number of IV levothyroxine doses that meet criteria for transition to oral therapy, number of IV levothyroxine doses transitioned to oral therapy, number of IV levothyroxine doses administered, number of IV levothyroxine doses prepared, and diet order. The primary objective of this review is to evaluate the percentage of IV levothyroxine orders transitioned to oral during a pharmacist-led initiative. The secondary objective of this review is to evaluate the waste associated with current IV levothyroxine preparation. Descriptive statistics will be used to analyze the data collected.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-231

Poster Title: Post-operative pain in patients who received epidural or spinal anesthesia during total hip arthroplasty

Primary Author: Kayla Pearson, NorthShore University HealthSystem, IL; **Email:** kpearson@northshore.org

Additional Author (s):
Josie Klink

Purpose: As the population ages and obesity rates continue to rise, more joint arthroscopies are being performed. It is imperative that the safest and most efficacious forms of anesthesia are utilized. Previously, a community hospital used epidural anesthesia for THA procedures but transitioned to using only spinal anesthesia. This conversion was initiated as an opportunity for cost savings as well as potential improved patient outcomes in terms of ambulation, post-operative pain scores, and reduced adjunctive pain medication use. This evaluation will compare the effects of spinal versus epidural anesthesia have on these outcomes.

Methods: This evaluation is a quality improvement evaluation and is exempt from IRB review. A list of patients who have undergone a THA and received either epidural or spinal anesthesia will be generated using the electronic medical record system. The following data will be collected: patient age, gender, baseline analgesic medications taken prior to surgery (if applicable), date of surgery, surgery procedure type, type of anesthesia received, time anesthesia was administered, intra-operative steroid administration, baseline and post-op pain scores according to electronic health record, ability to stand within six hours of anesthesia injection, distance walked on post-op day zero (in feet), name of as needed pain medications and number of doses administered, surgeon, and drug costs of epidural and spinal anesthesia. The primary objective will be differences in total pain relief (TOTPAR) scores over each post-operative day for each anesthesia type. Results will be shared with the anesthesia and orthopedic surgery departments.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-232

Poster Title: Evaluation of appropriateness of meropenem use in a community health-system

Primary Author: James Kallander, NorthShore University HealthSystem, IL; **Email:** jkallander@northshore.org

Additional Author (s):
Jim Cha

Purpose: Antibiotic resistance is increasing globally. Inappropriate exposure to antimicrobials is the highest risk factor for the development of antibiotic resistance. Ensuring appropriate use of meropenem is crucial in keeping meropenem a viable treatment option for future use. An internal project conducted in 2016 at this community health-system showed a possible increase in meropenem utilization compared to previous years. The purpose of this medication use evaluation is to determine whether the initial order for meropenem at a four-hospital community health-system is appropriate based on local guidelines.

Methods: This is a retrospective chart review for quality assurance purposes and is exempt from IRB review. Meropenem use from July 1, 2015 to June 30, 2016, for all patients older than 18 years of age, admitted to the hospital will be collected. Fifty patient encounters will be reviewed from each of the four hospitals, randomly selected from all patients encounters receiving meropenem. Information obtained will include indication for meropenem, identification of prescriber's specialty, ID consult before second dose, days of meropenem, days of total antibiotics within the hospital, and calculated creatinine clearance. The primary objective is to determine if the initial order for meropenem has been appropriate per criteria in local institution guidelines. Appropriate use is defined as meeting the dosing, indication, frequency and infectious disease (ID) consultation recommendations defined in the local guideline. Secondary objectives will include comparison of the four hospitals for appropriate use, days of therapy, and average days of meropenem use per antibiotic therapy days. Orders initiated in the emergency department will be reviewed for indication, dose, and ID approval. Descriptive statistics will be used to analyze the information.

Results: n/a

Conclusion: n/a

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-233

Poster Title: Follow-up evaluation of appropriateness of initial edoxaban orders and prescriptions

Primary Author: Hardik Patel, NorthShore University HealthSystem, IL; **Email:** hpatel2237@gmail.com

Additional Author (s):
Izabela Wozniak

Purpose: Edoxaban is unique because it is contraindicated for atrial fibrillation in patients with a creatinine clearance greater than 95 milliliters per minute. An initial evaluation of edoxaban ordering was conducted for all inpatient orders and outpatient prescriptions after addition of edoxaban to formulary at this community health-system. Prescribers were contacted by letter regarding any orders that did not meet Food and Drug Administration (FDA) approved dosing criteria based on indication and renal function. This evaluation is a follow-up evaluation conducted to see if there was a change in ordering patterns after education was provided to prescribers.

Methods: A retrospective, electronic chart review is being conducted on all initial edoxaban orders for both inpatient orders and outpatient prescriptions between April 1, 2016 and September 30, 2016. This review is being completed for quality improvement purposes and, therefore, exempt from review by the Institutional Review Board. The primary objective of this evaluation is to assess if edoxaban was ordered appropriately based on indication specific FDA approved dosing criteria. A secondary objective is to examine the appropriateness of edoxaban stratified by indication of either atrial fibrillation or venous thromboembolism. Another secondary objective is to determine the date of the serum creatinine level that immediately preceded the edoxaban order, relative to the date of the initial order for edoxaban. All initial edoxaban orders within the prespecified time period will be evaluated. Descriptive statistics will be used to evaluate the data. The results of this evaluation will be submitted to committees within this health-system.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-234

Poster Title: Evaluation of the impact of sugammadex on rocuronium and succinylcholine use

Primary Author: Shayna Acance, NorthShore University HealthSystem, IL; **Email:** sacance@northshore.org

Additional Author (s):
Muriel Forbes

Purpose: Sugammadex is a selective binding agent indicated for reversal of neuromuscular blockade induced by rocuronium or vecuronium. Neostigmine was the drug of choice for reversal prior to the availability of sugammadex. Sugammadex was added to the health system's inpatient formulary in January 2016. Succinylcholine is an alternative option for neuromuscular blockade during surgical procedures; however, it does not have an established reversal agent. The purpose of this medication use evaluation is to assess the change in usage of rocuronium and succinylcholine after the addition of sugammadex to the health system's formulary.

Methods: This is a retrospective chart review of a random sample of patients who received succinylcholine or rocuronium during a surgical procedure before and after sugammadex was added to the inpatient formulary. The time period for the review is April 1 – August 31, 2015 and April 1 – August 31, 2016. This is a quality assurance review and is exempt from Institutional Review Board approval. A list of patients 18 years and older who received at least one dose of succinycholine or rocuronium during a surgical procedure will be generated from electronic health records within the health system. Patients who received either medication for the purpose of rapid sequence intubation, had a contraindication to succinylcholine use, or who were enrolled in the neostigmine-sugammadex study will be excluded. The following data will be collected: patient age, date of surgery, type of surgery, patient location, and total number of administrations of rocuronium, succinylcholine, sugammadex, and neostigmine. The primary endpoint is to assess if there was a change in the usage of rocuronium and succinylcholine, while the secondary objective is to evaluate financial impact.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 9-235

Poster Title: Evaluation of dose alerts within order sets at a community health system

Primary Author: Onchuma Kaenkumchorn, NorthShore University HealthSystem, IL; **Email:** okaenkumchorn@northshore.org

Additional Author (s):
Jenny Szparkowski
Lynn Boecler

Purpose: Exposure to numerous alerts leads to desensitization of alerts, commonly known as alert fatigue. Related orders may be preconfigured as order sets to streamline order entry for a specific problem or diagnosis. The ideal configuration of order sets should produce minimal dosing alerts. An area of improvement for dose alerts was identified upon review of the organization's electronic health record (EHR) optimization report. The purpose of this evaluation is to review the organization's dose alerts originating from order sets and address the identified dose alerts contributing to alert fatigue.

Methods: This is a retrospective review of the most commonly encountered dose alerts involving ambulatory and inpatient order sets from the organization's August 2016 monthly statistical alert report. Order sets with dose alerts that appeared fifty times or more in order entry from the August 2016 monthly statistical report were selected. Inclusion criteria consists of dose warnings from entered orders within the selected order sets that were canceled, overridden, or removed and appeared ten times or more within an order set. The dose alerts will be evaluated against reputable medication references and reviewed with a clinical taskforce. The possible action(s) for identified dose alerts contributing to alert fatigue include no change, database vendor warning change, suppression of interaction at medication level, or suppression of interaction at order set level. Any recommended changes to dose alerts will be brought to the organization's Pharmacy and Therapeutics Committee for final approval prior to implementation.

Results: Results are currently in progress.

Conclusion: Conclusions are currently in progress. Final conclusions will be presented at the 2016 Midyear Clinical Meeting.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 9-236

Poster Title: Timeliness of time-critical medication administration

Primary Author: Bridget Dolan, NorthShore University HealthSystem, IL; **Email:** bdolan@northshore.org

Additional Author (s):
Jennifer Szparkowski

Purpose: Compliance with timeliness of medication administration is important for patient safety and the effectiveness of therapy. Time-critical medications are defined as medications that an early or late administration of greater than thirty minutes may cause harm or negatively impact the intended therapeutic effect. This project focuses on a four hospital community health system's administration of time-critical medications (antibiotics, anticonvulsants, and anticoagulants) and medications scheduled every six or eight hours. The project was designed to evaluate and improve the compliance, according to the health system's administration policy, with meeting the one hour window of scheduled time from administration time of medications.

Methods: This retrospective chart review is deemed quality evaluation and is exempt from review by the Institutional Review Board. All patients who received scheduled doses of intravenous antibiotics, intravenous anticonvulsants, and/or any anticoagulants between May 1, 2016 and July 31, 2016 will be included. Any patients who received a scheduled medication every six or eight hours between May 1, 2016 and July 31, 2016 will also be included. The following data will be collected: medication name, therapeutic class, nursing unit, specific hospital, administration time, administration due time, number of every six hour and/or every eight hour scheduled dose given within twenty-four hours, held doses, rescheduled doses, missed doses that were not rescheduled, and missed doses that were rescheduled. Orders that are discontinued prior to twenty-four hours are excluded from the second objective. The primary objective is to evaluate compliance with the health system's policy for administration of time-critical scheduled medications, defined as meeting the one hour window of scheduled time from administration time. The secondary objective is to evaluate the compliance of the every six- and eight- hour scheduled medications within a twenty-four hour period. Descriptive statistics will be used to evaluate compliance.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-237

Poster Title: A community oncology center's experience with immune checkpoint inhibitors

Primary Author: Laura Schmidt, NorthShore University HealthSystem, IL; **Email:** schmidt.l.ann@gmail.com

Additional Author (s):
George Carro
Abigail Harper
Wendy Hui

Purpose: Checkpoint inhibitors are changing the landscape of treatment in oncology. The first checkpoint inhibitor, ipilimumab (Yervoy®), was approved in 2011, followed by pembrolizumab (Keytruda®) and nivolumab (Opdivo®). The use of checkpoint inhibitors is growing rapidly as the FDA-approved and off-label uses for these medications broaden. Given the relative infancy of the use of checkpoint inhibitors, much information stands to be gained on their use in oncology, especially regarding toxicity. The purpose of this project is to explore a community oncology center's experience with checkpoint inhibitors in order to draw observations on toxicity patterns and treatment impact.

Methods: A retrospective chart review will be conducted on patients who have received pembrolizumab, ipilimumab, and/or nivolumab from May 1, 2011 to July 31, 2016. This evaluation does not require Institutional Review Board approval because the findings will be used as a quality assurance measure. The following information will be collected: patient demographics, disease state, treatment information, and adverse event details. The primary objective of this evaluation is to assess this oncology center's experience with checkpoint inhibitors, focusing on treatment toxicity and treatment impact in the clinical practice setting. The results will be presented using descriptive statistics utilizing a simple proportional analysis.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-238

Poster Title: Evaluation of concentrated insulin use at a community healthsystem

Primary Author: Ryan Kinnavy, NorthShore University HealthSystem, IL; **Email:** rkinnavy@northshore.org

Additional Author (s):
Dipa Patel
Lisa Patel

Purpose: Concentrated insulin options provide the advantage of patient-specific tailoring of insulin therapy by reducing administration volumes and optimizing absorption kinetics. However, the differing concentrations of these formulations can create challenges during patient transitions of care. The purpose of this evaluation is to describe the usage patterns and appropriateness of currently available concentrated insulin products initially ordered during inpatient admissions at a community healthsystem. Results of this retrospective review will give insight into concentrated insulin prescribing practices and compliance with current institutional policy regarding concentrated insulin regular U-500 use.

Methods: This evaluation is a retrospective review of patients 18 years of age or older admitted to the hospital with an order for a concentrated insulin formulation including insulin glargine U-300, insulin regular U-500, insulin lispro U-200, or insulin degludec U-200 from August 1, 2015 to July 31, 2016. This evaluation will be used for quality improvement, and therefore, is exempt from IRB review. For all patients with a concentrated insulin product prescribed during an inpatient admission, data including insulin formulation, dose, frequency, ordering provider, administration instructions, use of patient's own medication, and prior to admission dose and formulation will be gathered. The presence of an endocrinology consult, progress note documenting insulin regular U-500 dose, and method of insulin regular U-500 measurement will be collected to determine compliance with current institutional U-500 insulin regular policy. Appropriate use of concentrated insulin will be defined as compliance with current institutional U-500 insulin regular policy and conversion of concentrated insulin glargine and lispro to their respective formulary-preferred U-100 formulations. Descriptive statistics will be used for this evaluation.

Results: Results for this evaluation are to be determined.

Conclusion: Conclusions for this evaluation are to be determined.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-239

Poster Title: Characterizing prescribing habits of direct oral anticoagulant (DOAC) in the emergency department

Primary Author: Jamie Nguyen, NorthShore University HealthSystem, IL; **Email:** jnguyen@northshore.org

Additional Author (s):
Anne Kaminski

Purpose: Recent studies show higher DOAC (apixaban, rivaroxaban, dabigatran, and edoxaban) prescription rates across clinical settings such as the emergency department (ED). To avoid potential bleeding complications, dosing should account for adjustments for drug-drug interactions and patient specific factors such as age, weight, and renal function. The purpose of this evaluation is to assess the appropriateness of new prescriptions for DOACs in patients discharged from the ED.

Methods: This Research-in-Progress is conducted on patients discharged from the ED with a new prescription for a DOAC from August 1, 2014 through August 31, 2016. This evaluation is exempt from review from the Institutional Review Board because it is conducted for quality improvement purposes. Patients are included if the date of the new DOAC prescription is the same as the ED discharge and the patient was discharged to home. Patients younger than 18 years of age or patients seen in the ED and admitted into the hospital are excluded. The primary objective of this evaluation is to assess the appropriateness of DOAC prescriptions in patients discharged from the ED based on recommended adjustments for age, weight, renal function, drug-drug interactions, and bridging requirements for each DOAC. The secondary objectives are to evaluate appropriate prescribing for each DOAC individually as well as to assess appropriate lab monitoring prior to these prescriptions being written. Descriptive statistics will be utilized to evaluate the data.

Results: To be determined

Conclusion: To be determined

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-240

Poster Title: Changes in provider prescribing practices for intravenous acetaminophen in pediatric patients

Primary Author: Amanda Penland, OSF Saint Francis Medical Center, IL; **Email:** amanda.m.penland@osfhealthcare.org

Additional Author (s):
Julie Kasap
Danny Mai

Purpose: Usage of intravenous acetaminophen is restricted at our institution due to the high cost relative to oral and rectal formulations. The primary objective of this study is to determine whether there has been an increase in usage of intravenous acetaminophen that falls outside of the Pharmacy and Therapeutics Committee approved criteria. The secondary objective is to determine if intravenous acetaminophen is consistently being administered outside of guidelines in certain patient populations or disease states. Subsequently, revisions may be made to the criteria for use guidelines based upon these findings.

Methods: This study will be submitted to the Institutional Review Board for approval. This study is a retrospective analysis of intravenous acetaminophen use at our pediatric hospital. The electronic medical record will be used to identify all patients who received intravenous acetaminophen between June 1st 2015 to August 31st 2015 or April 1st 2016 to June 30th 2016. All patients who received a dose of intravenous acetaminophen and were less than 18 years of age will be included in the study. Patients greater than 18 years of age and patients in the neonatal intensive care unit receiving intravenous acetaminophen for patent ductus arteriosus will be excluded. Patient data collected will include: patient age and weight, acetaminophen dosage, amount of time after operative procedure that the acetaminophen was administered (if applicable), number of doses given, indication for use (diagnosis/procedure), absolute neutrophil count (ANC), diet order at time of administration, admission diagnosis, and the authorizing user for the order. Each administration will be assessed to determine if it met the hospital's criteria for use guidelines. The total number of administrations that fall outside of the criteria for use guidelines will be compared between the 3 month periods to assess for

trends in prescribing practices. Descriptive statistics will be utilized, as well as additional statistical analyses when applicable.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-241

Poster Title: Hospital readmission rates for patients treated with ceftriaxone and azithromycin versus levofloxacin for community acquired pneumonia

Primary Author: Luke Piarowski, OSF Saint Francis Medical Center and Children's Hospital of Illinois, IL; **Email:** luke.r.piarowski@osfhealthcare.org

Additional Author (s):
Timothy Murrey
Julie Giddens
Jessica Luebshaw

Purpose: The current Infectious Disease Society of America (IDSA)/American Thoracic Society (ATS) guidelines on the management of community-acquired pneumonia (CAP) recommend treatment with levofloxacin or the combination therapy ceftriaxone and azithromycin for patients being treated on a floor other than the intensive care unit (ICU). This study aims to determine if the combination therapy is superior to levofloxacin monotherapy based on thirty-day readmission rates of any cause. Secondary endpoints analyzed will include mortality within thirty days, reason for readmission, and adverse effects of patients discontinuing therapy.

Methods: This multi-center retrospective study will collect data from non-ICU patients admitted for CAP. The patients will be selected by the electronic health record by using an international classification of diseases (ICD) for CAP. The following data points will be collected: age, sex, length of stay, all-cause readmission within thirty days, time to readmission, total treatment length with each drug group, reason for discontinuing antibiotic, Clostridium difficile infection development, antibiotic regimen changed, duration of fever, mortality within thirty days, reason for readmission, adverse effects leading to discontinuation of treatment and congestive heart failure. Inclusion criteria are eighteen years of age or greater, CAP diagnosis, and receiving either the combination ceftriaxone and azithromycin or levofloxacin monotherapy within forty-eight hours of presentation. Exclusion criteria are ICU patients, less than eighteen years of age, pregnancy, prisoners, multi-drug resistant organism isolated in the past ninety days, antibiotic treatment for five or more days in the past ninety days, intravenous antibiotics within the past ninety days, chronic obstructive pulmonary disease, and immunocompromised patients. The program Crimson will be utilized to gather certain data

points, while the rest will be gathered with chart review. Certain data points will be assessed by the investigator including reason for discontinuing an antibiotic, side effects developed, and reason for readmission.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-242

Poster Title: Evaluation of the efficacy and safety of prescribing practices for patient controlled analgesia in pediatric patients at a large academic children's hospital

Primary Author: Cassandra Collins, OSF St. Francis Medical Center, IL; **Email:** cackama@gmail.com

Additional Author (s):
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Jody Mallicoat

Purpose: Uncontrolled pain in pediatric patients can have serious and lifelong consequences. Patient-controlled analgesia (PCA) use in children is often challenging, mainly due to concerns for adverse events such as respiratory depression, excessive sedation, and nausea. The objective of this study is to determine if current prescribing practices of PCA are adequately controlling pain while maintaining patient safety in post-surgical patients or patients with sickle cell pain crisis. In addition, a comparison of strategies and their outcomes will be made between the two populations to assess if prescribing of PCA should be tailored by indication.

Methods: This study will be submitted to the Institutional Review Board for approval. This study will be a retrospective analysis of PCA ordering practices at a large academic children's hospital. Patients will be included if they were 6-17 years of age and had an order for a morphine, fentanyl, or hydromorphone PCA between June 30th, 2015 and June 30th, 2016. Patients who were pregnant, had undocumented pain scores, or were on a PCA for indications other than post-surgical pain or sickle cell crises will be excluded. The following data will be collected: indication for PCA, age, weight, gender, PCA-ordering service, concurrent analgesic medications, PCA drug and settings (demand dose, lockout period, basal dose, and 4 hour lockout) at PCA initiation and at 8 hours of therapy. Efficacy measures will include: the number of demands, number of injections, and total amount of opioid received over 8 hours, patient pain score goals, and pain scores hourly up to 8 hours after initiation of PCA. Safety measures will include whether naloxone was administered, and if so, how many doses were given. Comparative analysis of initial dosing, total amount of opioid utilized, length of time to pain goal, and frequency of naloxone use will be performed. Data will be analyzed via descriptive statistics as well as additional statistical analyses, when applicable.

Results: Forthcoming

Conclusion: Forthcoming

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-243

Poster Title: Evaluation of phytonadione (vitamin k1) use for international normalized ratio reversal secondary to warfarin in a community hospital

Primary Author: Anmol Chhabra, Palos Community Hospital, IL; **Email:** achhabra@paloshealth.com

Additional Author (s):
Andrera Quinn

Purpose: Phytonadione (vitamin k1) is a therapeutic option to reverse elevated international normalized ratio (INR) secondary to warfarin. The American College of Chest Physicians define criteria for non-emergent and emergent INR reversal. They recommend use of oral phytonadione for non-emergent INR reversal and phytonadione via slow intravenous infusion for urgent INR reversal. Use of subcutaneous administration is not recommended due to erratic absorption. This analysis was designed to evaluate the prescribing practices for phytonadione and the subsequent impact on INR.

Methods: A retrospective analysis, using the electronic medical record, was conducted in patients admitted to Palos Community Hospital in July 2016. Patients 18 years of age and older on warfarin therapy prior to admission who received at least 1 dose of phytonadione were included. Patients with documented hepatic failure and those without documented warfarin use prior to phytonadione administration were excluded. Documented appropriate indications for phytonadione included reversal for surgery, active bleed of any type, INR of 10 or greater, or documented concern for bleed development. Data points analyzed included overnight INR change, need for additional doses of phytonadione, and time to surgery post reversal. The overnight INR change was defined as the difference of the baseline INR (day 0) and INR post phytonadione dose (day 1). The need for additional phytonadione doses was further analyzed in obese patients (patients weighing greater than or equal to 135 percent of ideal body weight (IBW)). Time to surgery was identified through chart review. The administration routes were recorded for all patients.

Results: Forty-one patients received 57 doses of phytonadione via subcutaneous (n equals 30), intravenous (n equals 14) and oral (n equals 13) routes of administration. Nine doses in 9

patients were administered without an appropriate indication documented. The median subcutaneous dose was 10 mg with a median day 0 INR of 2.85. Median overnight INR decrease was 1.1. Eight patients received repeat doses. Four of 10 obese patients required another dose. Median time to surgery was 37 hours. The median intravenous dose was 5 mg with a median day 0 INR of 2.75. Median overnight INR decrease was 1.3. One patient received a repeat dose. Zero of 3 obese patients required another dose. Median time to surgery was 28 hours. The median oral dose was 5 mg with a median day 0 INR of 2.7. Median overnight INR decrease was 1.2. Three patients received repeat doses. Three of 8 obese patients required another dose. Median time to surgery was 19 hours. Four patients received phytonadione via multiple routes. Two patients received an intravenous dose following a subcutaneous dose, 1 patient received an intravenous dose following an oral dose, and 1 patient received an oral dose following a subcutaneous dose.

Conclusion: Despite guideline recommendations, subcutaneous administration was selected for the majority of doses, resulting in lesser INR reversal. Repeated doses were more prevalent following initial oral and subcutaneous administrations compared to intravenous, regardless of patient weight. Subcutaneous administration correlated to the longest time to surgery. Although oral administration had the shortest time to surgery, several patients received more than 1 dose. Future actions include creation of an institution specific phytonadione guideline for use, recommending to default the primary parenteral route of administration to intravenous for emergent reversal, and providing hospital wide education of these changes.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-244

Poster Title: Evaluation of intravenous dual anaerobic coverage with piperacillin-tazobactam and metronidazole in a community hospital

Primary Author: Laura Lofky, Palos Community Hospital, IL; **Email:** llofky@paloshealth.com

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Purpose: Clinically unnecessary antimicrobial agents can lead to the development of increased resistance, expose patients to an increased risk of untoward effects and increase costs to the health care institution. Despite previous health care provider education, dual anaerobic coverage with piperacillin-tazobactam and metronidazole remains an ongoing practice. The anaerobic susceptibility of these agents approximates 100 percent and therefore using both agents in absence of clear indication may be redundant. This evaluation was designed to assess the prescribing practices and indications for dual anaerobic therapy and identify direct future educational initiatives at a community hospital.

Methods: A retrospective analysis using the electronic medical record (EMR) was conducted to evaluate concomitant intravenous dual anaerobic use with piperacillin-tazobactam and metronidazole in adult patients from July 2016 through August 2016 at Palos Community Hospital. Patients were included in the analysis if they received one or more doses of both antibiotics concomitantly. Patients with documented Clostridium difficile infection per positive PCR assay or suspected C. difficile infection per note documentation were excluded. Location of the initial dose (emergency department versus inpatient unit), the presence or absence of an infectious disease consult, indication for antimicrobial therapy, presence or absence of microbiological cultures and identified pathogen, when applicable, or documentation of no pathogen isolated, were recorded.

Results: A total of 60 patients received at least one dose of both agents. The location of initiation of dual anaerobic therapy was evenly split between patients in the emergency department (50 percent, n equals 30) and patients located in an inpatient unit (50 percent, n equals 30). The infectious diseases service was consulted for 28 percent of patients (n equals 17). Intra-abdominal infection (IAI) was the primary indication for therapy and the documented

source of infection for 90 percent of the patients (n equals 54). Cultures were not obtained in 27 percent of patients (n equals 16). Of the patients that had cultures obtained, no pathogen was isolated in 66 percent of patients (n equals 29). Of the 15 patient that had isolated pathogens, the most common pathogen isolated in 47 percent of patients (n equals 7) was Escherichia coli. Potentially resistant pathogens (e.g. Bacteroides species, Clostridium perfringens, and Actinomyces species) were not isolated in any patients with microbiological data.

Conclusion: Dual anaerobic coverage continues despite lack of guideline recommendations and patient specific clinical evidence to support its use. IAI was the most common indication for therapy. Of the 44 patients with microbiological data, more than half had no pathogen isolated and resistant pathogens were not isolated, indicating possible unwarranted exposure to antibiotics, adverse drug effects and increased healthcare costs. Future steps include implementing a targeted service line educational intervention, reviewing current order sets for unnecessary duplicative therapy, and enhancing provider and pharmacist awareness of potentially unnecessary dual anaerobic therapy via utilization of the antimicrobial stewardship scoring system in the EMR.

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-245

Poster Title: Evaluating the cost benefit of implementing extended infusion of cefepime within a 350-bed urban community teaching hospital.

Primary Author: Jelena Saric, Presence Health St. Joseph Hospital, IL; **Email:** jelena.saric@presencehealth.org

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Purpose: Alternative dosing strategies have been employed by antimicrobial stewardship programs to combat escalating resistance patterns. One such example is extended infusion of β-lactam antibiotics to provide optimal time-dependent killing. Prolonged infusions of these antibiotics have been shown to maximize likelihood of antibiotic concentrations above the minimum inhibitory concentration of the pathogen, resulting in enhanced clinical outcomes and cost savings. The objective of this study will be to evaluate the economic benefit after implementation of cefepime as an extended infusion in comparison to the standard 30-minute infusion at the same interval.

Methods: This study will undergo an expedited review by the hospital's Institutional Review Board. Monthly utilization reports will be generated three months prior to and after implementation of extended infusion cefepime. A retrospective chart review will be conducted for patients on cefepime. Data to be collected from electronic health record include indication of use, number of doses administered and duration of therapy, infusion time, and culture results. A standard wholesale acquisition cost will be used to calculate total cost of cefepime 1 gram and 2 grams vials. Total drug expenditures will be compared between pre and post implementation of extended infusion cefepime.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-246

Poster Title: Pharmacist-driven education to increase adherence to evidence-based headache guidelines in the Emergency Department (ED).

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Purpose: The objective of this study is to determine to what degree pharmacist directed education to physicians and nurses in the ED can impact the use of opioids and migraine specific medications in patients with a diagnosis of headache or migraine. The study will also attempt to determine the impact education will have on physicians prescribing migraine specific medications for headache or migraine.

Methods: The study will be Institutional Review Board approved. The electronic medical record system will be used to compile 90-day retrospective data of patients who presented to the ED with chief complaint of headache per international classification of diseases 9 code. Baseline data will include: age, gender, history of headache, any current medications indicated for migraine, and any opioid medications. Exclusion criteria will include patients under the age of 18 years old, pregnancy, secondary headache (as defined by the International Headache Society), and documented contraindications to non-opioid headache medications. Next, three 15-minute in-service presentations directed towards physicians and nurses in the ED will be conducted. A handout summarizing the American Headache Society ED treatment recommendations will be provided at each in-service. Physician and nurse attendance will be collected. The 90-day data will be collected after the last in-service to determine the impact on physician medication selection for treatment of headache in the ED.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-247

Poster Title: Effect of pharmacist verification on fluoroquinolone orders in the emergency department

Primary Author: Monica Dutridge, Presence Saint Joseph Medical Center, IL; **Email:** mndutridge92@gmail.com

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Purpose: The Food and Drug Administration (FDA) recently released safety alerts regarding appropriate indications for fluoroquinolone use. In patients who have other treatment options available for acute bacterial sinusitis, bronchitis, and uncomplicated urinary tract infections, the risk of serious side effects outweighs the benefit of fluoroquinolone use. Based on the FDA's safety communication and trends in the study institution's antibiogram, fluoroquinolones were removed from auto-verification in the emergency department's (ED) automated dispensing cabinets. The objective of this study is to determine the effect on time to administration and appropriate empiric therapy after implementation of required pharmacist verification of ED fluoroquinolone orders.

Methods: This study will be submitted to the Institutional Review Board for approval. A data surveillance system will be used to identify all fluoroquinolone orders originating in the ED for a three month period both prior to and after the implementation of required pharmacist verification. The data collected will include: time of order entry, time of nurse acknowledgement, time of verification, time of administration, antibiotic indication, and fluoroquinolone dosing. The primary outcome of this study will be to determine the effect of pharmacist verification on time to administration. The secondary outcome of this study will be to observe if pharmacist verification improves appropriateness of empiric therapy. If time to administration does not prove to be significantly delayed and empiric therapy choice proves to be more appropriate, this data could be used to support the eventual removal of all antibiotics from auto-verification in the ED automated dispensing cabinets.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-248

Poster Title: Effect of fluoxetine on motor recovery after acute ischemic stroke

Primary Author: Meredith Manning, Presence Saint Joseph Medical Center, IL; **Email:** meredith.manning2@presencehealth.org

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Purpose: Stroke is one of the leading causes of disability worldwide, with two-thirds of surviving patients left with persistent motor deficits. Physical therapy has been shown to reduce functional deficits, but additional strategies are needed to improve outcomes and promote restoration of patients' normal pre-stroke function. Multiple small studies have shown selective serotonin reuptake inhibitors to be successful in this role, but this strategy has not been widely incorporated into practice. The objective of this study is to determine whether the addition of fluoxetine to physical therapy further improves functional outcomes in ischemic stroke patients.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients will be eligible for enrollment in the study if they are 18 years or older with an acute stroke and a baseline modified Rankin Scale (mRS) score of 3 or more. Patients taking any antidepressant medication at the time of admission will not be eligible. Patients will receive either standard physical therapy alone or physical therapy in combination with fluoxetine 20 mg daily for 3 months. The following data will be collected: patient age, gender, past medical history, current medications, reported adverse events, mRS scores, National Institutes of Health Stroke Scale (NIHSS) scores, Patient Health Questionnaire (PHQ)-2 scores, and PHQ-9 scores for those with a positive depression screen on the PHQ-2. Patient progress will be monitored with repeated mRS, NIHSS, and PHQ-2/9 scores on Days 0, 30, 60, and 90. The primary outcome of this study will be the mean change in mRS score from Day 0 to Day 90. Secondary outcomes will include the mean change in NIHSS and PHQ-2/9 scores from Day 0 to Day 90 and adverse events attributable to fluoxetine use reported at any time during the treatment period.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-249

Poster Title: Implementation of pharmacist-driven beta-lactam allergy verification

Primary Author: Humera Syed, Presence Saint Joseph Medical Center, IL; **Email:** humera.syed@presencehealth.org

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Purpose: One aim of antimicrobial stewardship is reducing unnecessary broad-spectrum antibiotic exposure, which is often driven by patient-reported allergies. The Centers for Disease Control and Prevention (CDC) reports that among patients who self-report allergies, only 10-15% have a true allergy confirmed by a positive skin test. Due to reliance on patient self-reported allergies and a lack of restriction policy, aztreonam use at the study institution exceeds the national average. The objective of this study is to determine if pharmacist-driven verification and intervention of penicillin allergy reactions decrease the inappropriate use of aztreonam.

Methods: This study will be submitted to the Institutional Review Board for approval. Retrospective data from May 2016 to July 2016 will be collected for all inpatient aztreonam orders at the study institution. Pharmacists will be educated on how to address aztreonam orders in the absence of documented beta-lactam allergies or allergy reactions. Prospective data will also be collected from October 2016 to December 2016 following the implementation of the pharmacist-driven intervention. Data collected will include: patients' beta-lactam allergies and respective reactions, antimicrobial indication, culture results, and appropriateness of aztreonam use. The primary outcome of this study will be to determine if pharmacist-driven documentation of beta-lactam allergy reactions correlates to a decrease in inappropriate aztreonam use.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-250

Poster Title: Value of a clinical pharmacist on multi-disciplinary behavioral health rounds

Primary Author: John Littler, Presence Saints Mary and Elizabeth Medical Center, IL; **Email:** john.littler@presencehealth.org

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Purpose: Pharmacists have been shown to improve patient safety, decrease adverse drug events, and reduce overall length of stay when participating in medicine rounds. The impact of pharmacists on behavioral health rounds has yet to be demonstrated. Behavioral health is a growing field for pharmacy because many psychiatric medications have complicated properties not understood by other healthcare professionals. Additionally, provision of psychiatric care often involves multiple medications that require adjustments to achieve optimal effects. The purpose of this study is to investigate the role of the clinical pharmacist in the behavioral health unit, particularly when rounding with a team of psychiatrists.

Methods: This study will include a retrospective review of the interventions made by pharmacists on behavioral health rounds over a four month period (August to December 2016). Each day, a clinical pharmacist rounds with one of the psychiatrist-based teams in the behavioral health units and documents interventions made. Each intervention will be reviewed and classified by type, including dose optimization, adverse drug event prevention, and duplicate therapy avoidance. Interventions will be reviewed for acceptance by the physician. The documented interventions will be compared to the interventions documented for that physician's patients from August to December 2015, before clinical pharmacists began participating in behavioral health rounds. The primary outcome of this study will be physician-accepted pharmacist interventions. Secondary outcomes for this study will include cost savings and adverse drug events prevented by pharmacist interventions on rounds.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-251

Poster Title: Pharmacist involvement in discharge medication reconciliation

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Additional Author (s):
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Purpose: Medication reconciliation is recognized as an important tool for the prevention of medication discrepancies and subsequent patient harm at care transitions. It is one of the more challenging aspects of inpatient care, and its accuracy is vital to patient safety. Pharmacists have a role in medication reconciliation to improve patient safety and avoid excess costs through identification of medication errors. The purpose of this retrospective review at Presence Saints Mary and Elizabeth Medical Center (PSMEMC) will be to assess the impact of pharmacist intervention during the discharge medication reconciliation process on medication discrepancies from the medical inpatient units.

Methods: This retrospective patient chart review will examine the number and type of medication discrepancies between an intervention group and a control group. Patients will be included if they are discharged from a medical inpatient unit (5th – 8th floor at PSMEMC) by the family medicine service or a private attending physician. Patients will be excluded if they leave against medical advice or are discharged to hospice or another healthcare facility. The intervention group will include patients discharged from January through April 2016 who had their medication reconciliation reviewed by a pharmacist at discharge. The control group will include patients discharged from January through April 2015, prior to the implementation of pharmacist medication reconciliation review at discharge. We hope to collect data from 100 patients in both the intervention group and control group, giving a total of 200 patients in this study. The intervention will include four components: (1) discharge medication lists prepared by the attending physician within the electronic hospital record (EHR); (2) pharmacist review of the discharge medication list to identify potential errors and discrepancies; (3) discussion

between the pharmacist and physician to correct discharge prescriptions as needed; and (4) patient counseling with education about their discharge medication list.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-252

Poster Title: HIT or miss: Assessing appropriateness of testing for heparin induced platelet aggregation

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Purpose: Heparin-induced thrombocytopenia (HIT) presents as an immune mediated response in which autoantibodies formed are directed against a complex of heparin and platelet factor 4. A score can be calculated and used to estimate the likelihood of heparin-induced platelet aggregation (HIPA). Appropriate assessment of HIPA can prevent unnecessary drug therapy changes to non-heparin products that may increase therapy costs and risk of complications. The objective of this study is to determine if pharmacist involvement in HIPA assessments decreases inappropriate testing and use of non-heparin anticoagulants.

Methods: This study will be submitted to the Institutional Review Board for approval. An analysis of a positive enzyme-linked immune-absorbent assay (ELISA) will be used to determine if ordering for serotonin release assay (SRA) was appropriate. ELISA will also be examined to determine if a switch to non-heparin anticoagulants was indicated. Education will be provided to clinical pharmacists regarding assessments of HIPA scores. Post-education, pharmacists will be involved in HIPA assessment and provide recommendations to physicians regarding appropriate therapy modifications. Chart reviews will be conducted to determine appropriateness of HIPA testing based on individual scores for a three-month period both prior to and after implementation of pharmacist intervention. The information for collection and review will include: ELISA, SRA results, platelet count, dates of prior heparin exposure, 4Tscore, length of stay, and evidence of bleeding/thrombus during treatment.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-253

Poster Title: An evaluation of intravenous immunoglobulin at Rush University Medical Center

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Purpose: Intravenous Immunoglobulin (IVIG) is used as a replacement therapy for immunodeficiences, but the exact mechanism of action for specific disease states is unknown. Adverse events related to kidney injury (AKI) have been noted with all forms of IVIG, but more commonly attributed to those products high in sucrose content, such as Carimune. The objective of this study was to characterize the use and safety of IVIG at Rush University Medical Center (RUMC).

Methods: This investigation was a single center, retrospective study that looked at all orders placed for Gammagard and Carimune between January 1, 2016 – June 30, 2016. All administered medications were evaluated for indication, IVIG product, dose, number of doses, baseline creatinine clearance, baseline serum creatinine (SCr), peak SCr during inpatient admission, history of renal transplant, anaphylactic reaction, ordering medical service, compliance with RUMC guidelines, and if the patient experienced acute kidney injury based on the Acute Kidney Injury Network (AKIN) criteria. Data was analyzed using descriptive statistics.

Results: A total of 125 patients and 326 administered doses of IVIG were evaluated, with neurology accounting for 67% of all IVIG products prescribed. Approximately 10% of patients experienced an adverse drug event which was defined as acute kidney injury or anaphylaxis. Thirty three percent of patients experiencing AKI received Carimune (n= 88), while 67% of patients experiencing AKI received Gammagard (n= 37).

Conclusion: Regardless of which IVIG product was used, both products were associated with acute kidney injury. Therefore, IVIG products should be used with caution and renal function

should be closely monitored. This finding is contrary to the prevailing notion that Carimune is more likely than Gammagard to induce AKI.

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-254

Poster Title: Evaluation of prednisone 40 mg daily for treatment of engraftment syndrome following autologous stem cell transplant

Primary Author: Zach Click, Rush University Medical Center, IL; **Email:** zach_click@rush.edu

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Purpose: Engraftment syndrome is a constellation of symptoms such as skin rash, diarrhea, pulmonary infiltrates, and/or weight gain that can occur during the early phase of neutrophil recovery following hematopoietic stem cell transplant. To date, there is limited data to establish a consensus regarding diagnostic criteria and steroid dosing. The purpose of this study is to evaluate for resolution of signs and symptoms of engraftment syndrome in patients prescribed prednisone 40 milligrams daily or its equivalent for treatment of the syndrome following autologous stem cell transplant.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients who have received an autologous stem cell transplant, were diagnosed with engraftment syndrome, and were treated with oral prednisone 40 milligrams or equivalent. Patients to be included will be greater than 18 years old who received an autologous stem cell transplant during the period of July 1, 2011 to July 1, 2016 and received prednisone 40 milligrams daily or equivalent for treatment of engraftment syndrome. Patients will be excluded if it is not their first transplant, if steroids were used for prevention of engraftment syndrome, or if any other dose of steroid was used for treatment. The following data will be collected: Age, sex, diagnosis, baseline weight, admission length, time to engraftment, conditioning regimen, intensive care unit transfer, time to symptom onset and resolution, steroid use, antibiotic use, antihypertensive and insulin addition or increase, blood glucose, blood pressure, microbiology data, oxygen saturation, supplemental oxygen requirements, absolute neutrophil count, serum transaminases, serum creatinine, total bilirubin, stool output, and chest x-ray. All data will be recorded without patient identifiers and maintained confidentially. The primary outcome of this study will be symptom resolution (yes or no) in patients diagnosed with engraftment syndrome who are treated with prednisone 40 milligrams or equivalent.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-255

Poster Title: Reduction in hospital costs by pharmacy management of hazardous medication waste

Primary Author: Shannon Hindahl, St. Elizabeth's Hospital, IL; **Email:** shannon.hindahl@hshs.org

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Purpose: National Institute for Occupational Safety and Health (NIOSH) and the Environmental Protection Agency (EPA) have regulatory guidelines impacting health practices surrounding the use and disposal of hazardous medications. Nursing staff who administer medications are not always aware of changes in the handling and appropriate disposal. Random audits of hazardous waste bins have discovered many non-hazardous medications resulting in increased quantity, weight and cost of hazardous medication waste. The purpose of this study is to reduce the amount of non-hazardous waste by placing pharmacy in charge of hazardous waste and providing education and routine reminders to the nursing staff.

Methods: This is an Institutional Review Board (IRB) exempt project. For the purpose of this study, we chose to focus on the black (hazardous) waste bins available on all nursing units. These black bins are associated with a higher cost per weight than the other bins available on nursing units. Pre-study hazardous medication waste costs will be assessed and compared to post-study costs. Hazardous waste bins will be removed from the nursing units and medications requiring disposal in said bins will be stored with bags for nurses to place the medication in and return the item to the pharmacy via the pneumatic tube system. Education will be provided to the nursing and pharmacy staff regarding these changes.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-256

Poster Title: Pharmacist Intervention on Severe Sepsis and Septic Shock Compliance Using Electronic Alerts in a Community Hospital Emergency Department

Primary Author: Kourtney Brammeier, St. Elizabeth's Hospital, IL; **Email:** k.brammeier16@gmail.com

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Purpose: To determine the impact of a mobile electronic alert and other pharmacy-driven initiatives on Center for Medicare and Medicaid Services (CMS) severe sepsis and septic shock compliance in the emergency department as well as clinical secondary outcomes of decreased hospital length of stay and inpatient mortality.

Methods: Following institutional review board (IRB) approval, the pharmacy department implemented a mobile automated alert system to assist with severe sepsis and septic shock identification. The alert has been implemented using a third party electronic monitoring system and notifies the pharmacists when vitals, laboratory data, and medications pertinent to sepsis are ordered for a patient. Pharmacists will then begin the process of ensuring appropriate antibiotic therapy, fluid resuscitation, documentation, and reassessment according to Center for Medicare and Medicaid Services (CMS) requirements. All patients greater than or equal to 18 years of age who present to the emergency department with severe sepsis or septic shock flagged via the new alert between January 1, 2016 and December 31, 2017 will be included in our study. The implementation of this process in the emergency department will serve as a pilot, which if successful, will be applied to the entire hospital.

Results: In progress.

Conclusion: To be determined.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-257

Poster Title: Prospective comparison of medication reconciliation completed by nurses versus trained pharmacy technicians in the emergency department

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Additional Author (s):
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Purpose: The Pharmacy Practice Model Initiative encourages the advancement of pharmacy technicians' role within patient care allowing pharmacists to practice at the top of their license. Previous studies show that technicians are equally efficacious as pharmacists when completing medication reconciliation, and showing a relative risk reduction of 77% in error rate compared to non-pharmacy personnel. The purpose of this study is to demonstrate the clinical benefit of trained pharmacy technicians gathering medication histories within the Emergency Department (ED).

Methods: A prospective study will be completed at HSHS St. John's Hospital in the ED. Patients will be included in the study upon presentation to the ED if they are admitted to the hospital, >18 years of age, and who are alert or have a caregiver present who is aware of the patients medication use. Exclusion criteria include: estimated time in ED less than one hour and patients who cannot provide a medication history or outpatient pharmacy. In the first phase, ED nurses will collect patients' medication history. A pharmacy resident will then complete the medication history again and collect data regarding errors. Following the initial phase, pharmacy technicians will be educated on how to properly and accurately collect medication histories from patients. An education tool has been developed and trained technicians will also use interview guides and templates during each patient interview. Phase two will consist of the trained pharmacy technicians completing the initial medication history instead of an ED nurse. A pharmacy resident will then gather the patient's medication history again as in phase one. Following both phases, hospitalists will complete a physician satisfaction survey regarding the medication reconciliation process. The primary outcome is the rate of medication reconciliation errors. Secondary outcomes include: Cost avoidance, description of error type, change in

physician satisfaction, and incidence of physicians completing reconciliation prior to medication history collection.

Results: Results will be reported at a later date.

Conclusion: Conclusions will be reported at a later date.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-258

Poster Title: Implementation of strategies to reduce targeted readmissions at a community teaching hospital

Primary Author: Josephine Varda, Swedish Covenant Hospital, IL; **Email:** jkochou@schosp.org

Additional Author (s):
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Purpose: The primary objectives are to evaluate causes and decrease readmissions for diagnoses which are part of the Hospital Readmissions Reduction Program. Readmissions for these diagnoses result in reduced hospital payments and penalties. Institution-specific readmission rates for congestive heart failure, pneumonia, chronic obstructive pulmonary disease, acute myocardial infarction, and hip or knee arthroplasty will be used to implement strategies to prevent readmissions from a pharmacy perspective. By analyzing patients with the highest number of readmission risk factors, a scoring tool will be designed to highlight future patients at risk.

Methods: This retrospective data collection study was approved by the Institutional Review Board. Patients with an unplanned readmission for the same primary diagnosis, as identified by ICD-10 codes and diagnosis-related groups in electronic medical records, within 30 days after discharge will be included. Patients will be excluded if: the patient expired, the patient was discharged after the study time period, the readmission was for an acute medical illness, it was an elective readmission, or the readmission occurred at a different hospital. Historical control data will be collected from October 1, 2015 to June 30, 2016 and compared with post risk factor tool implementation data collected from October 1, 2016 to March 31, 2017; with a maximum of 100 patients in each group. Primary outcomes include: number of patients readmitted for targeted diagnoses to Swedish Covenant Hospital, risk factors for readmissions, and causes of avoidable readmissions. The secondary outcome will evaluate the readmission cost in terms of length of stay. The risk factor scoring tool in addition to pharmacist in-services will be provided so that pharmacists could proactively provide additional medication education and/or make clinical interventions in order to try to prevent future readmissions.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-259

Poster Title: Aztreonam usage in penicillin-allergic patients: assessing the implementation of a penicillin allergy guideline

Primary Author: Michelle Lee, Swedish Covenant Hospital, IL; **Email:** mlee322@gmail.com

Additional Author (s):
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Purpose: Reported penicillin allergies are associated with increased use of alternative antibiotics that may be broader, less effective, and more costly. In an effort to decrease unnecessary alternative antibiotic usage and optimize antibiotic selection, a penicillin allergy guideline was implemented at a community hospital in March 2015 to assist clinicians in properly assessing patient-reported penicillin allergies as well as antibiotic prescribing. The primary objective of this study is to examine the impact of the penicillin allergy guideline by measuring appropriate usage of aztreonam prior to and after guideline implementation.

Methods: This retrospective data collection study was approved by the Institutional Review Board. Electronic medical records will be evaluated for the historical control group from January 2014 to July 2015 and for the post-intervention group from August 2015 to current. Patients who received at least one dose of aztreonam will be included. Patients younger than 18 years old, discharged after one dose in the emergency department, who received one dose for outpatient surgery or in the obstetrics department will be excluded. The following data will be collected and evaluated: hospital stay (date of admission/discharge, readmission), concurrent/alternative antibiotics (indication, duration of therapy, cultures and sensitivities), allergy information (presence/absence, risk stratified by severity), adverse effects, pharmacist clinical interventions, and drug cost. Primary outcome measures include the appropriate usage of aztreonam measured by days of therapy per 1000 patient-days, accuracy of allergy documentation, culture and sensitivity data, and pharmacists' interventions. Inappropriate usage of aztreonam will be defined as prescribing aztreonam without documentation of a penicillin allergy, prescribing aztreonam when a patient obviously tolerated beta-lactam antibiotics such as penicillins, cephalosporins, and carbapenems, or prescribing aztreonam when drug intolerance or non-IgE mediated reactions occurred with the antibiotics described above. Secondary outcomes include the safety of alternative antibiotic usage assessed by

adverse event documentation, net drug cost savings per year, and estimated length of stay comparing the pre-intervention and post-intervention periods.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-260

Poster Title: Bedside cardiac medication counseling and its impact on post-discharge medication literacy and readmission rates

Primary Author: Melvin George, Swedish Covenant Hospital, IL; **Email:** mgeorge@schosp.org

Additional Author (s):
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Purpose: The Centers for Medicare and Medicaid Services reduce reimbursements to hospitals with a high readmission ratio. According to a study conducted at Boston University, low health literacy was found to be a significant risk factor for patient readmission. Therefore, counseling points will be incorporated into the electronic medical records at this institution for formulary medications as a way to help staff improve patients' understanding of their medication regimens. The primary objective of this study is to evaluate the effect of inpatient bedside medication counseling for select cardiac patients on their medication literacy after being discharged back to the community.

Methods: This study has been submitted to the Institutional Review Board for review. Patients admitted with acute myocardial infarction, heart failure, and non-valvular atrial fibrillation or flutter between 10/06/16 and 12/31/16 will be included in this study. During the subjects' hospitalization period, staff will provide counseling using standardized medication counseling points for each medication being used to treat their specific cardiac disease state. Following the subjects' hospital discharge, their medication literacy will be assessed by pharmacy staff within four days of discharge and again within 14 days of discharge via telephone with the use of a standardized script. Two medications will be chosen through a randomization process and the subjects will be asked to recall the selected medication's purpose, strength, dose, frequency, and side effects. The results from the questionnaire will identify which literacy parameter is weakest and would require greater emphasis in the future. The primary outcome will be 30-day readmission rates, while the secondary outcome will be the impact on patient's perception of medication communication by hospital staff as measured by the Hospital Consumer Assessment of Healthcare Providers and Systems Survey scores. Data collected for the historical control group between 10/06/15 and 12/31/15 will be compared to the results of the study group.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-261

Poster Title: Does pharmacist intervention affect prescription fill rates of antiplatelet medications following percutaneous intervention with stent placement? A comparison of current and historical standards of care

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Purpose: Antiplatelet therapy for patients undergoing a percutaneous intervention with stent placement is essential for 12 months or more in most patients. The purpose of antiplatelet medications is to curtail adverse outcomes, such as myocardial infarction, restenosis, or death. Patients that do not take antiplatelet medications within 30 days of hospital discharge have a five-fold increase in mortality and a three-fold increase in myocardial infarction. In an attempt to ensure antiplatelet medications are filled within the first 30 days, a pharmacist intervention now occurs at the discharge process as part of the current standard of care.

Methods: This study was approved by the internal review board. The study will compare the fill rate of antiplatelet medications between a historical group without pharmacist involvement in the discharge process and two prospective groups with pharmacist involvement. The historical group will be identified using a computer generated report of patients that received antiplatelet loading doses during a three-month period in the previous year. A daily report of patients loaded with antiplatelet medications will be utilized to identify patients in the prospective groups. Upon discharge, the pharmacist will counsel patients in both prospective groups. A prescription will then be sent to either the hospital outpatient pharmacy (group 1) or an alternative pharmacy (group 2) based on patient preference. Fill rate will be determined utilizing internal data for patients that elect to fill at the hospital outpatient pharmacy. A follow-up call will be made to those patients who fill at an alternative pharmacy to determine fill rates. The primary outcome is the fill rate of antiplatelets, which will act as a surrogate marker of

medication compliance. Secondary outcomes include hospital readmissions, myocardial infarctions, and restenosis rates that occur within 30 days of the stent procedure.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-262

Poster Title: Evaluation of the impact of a workflow system on error rates in sterile compounding

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Additional Author (s):
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Purpose: Sterile compounding of intravenous medications continues to be a source of error within hospital pharmacies. Errors involving intravenous solutions are especially dangerous and can lead to injury or death of a patient. In April of 2015 BD announced its release of an innovative workflow system that allows for increased safety through more accurate compounding. This system utilizes barcode scanning and a gravimetric workflow to ensure that the correct medication and accurate dose is dispensed. The objective of this study is to determine if the implementation of the workflow system reduces variance when preparing intravenous bags for a stock batch.

Methods: This study is approved by the Institutional Review Board. Both prior to and after the implementation of the workflow system, the following data will be collected for a two-week period: the weight of the intravenous bag prior to adding drug, the weight of the intravenous bag after adding drug, the amount of drug added to the bag. The difference between the beginning and end weight of each bag in a batch will be calculated and the overall variance between the bags in each batch will be determined. The data collected before and after the implementation of the workflow system will be compared to determine the impact the workflow system has on the error rate when compounding sterile intravenous medications for a stock batch.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Evaluative Study

Session-Board Number: 9-263

Poster Title: Evaluation of the use of prothrombin complex concentrates (PCCs) at University of Illinois Hospital

Primary Author: Kripa Patel, University of Illinois at Chicago, IL; **Email:** kpate39@uic.edu

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Purpose: Predominant anticoagulation methods including warfarin and Factor Xa (FXa) inhibitors (fondaparinux, apixaban, edoxaban, and rivaroxaban) have a major bleed risk. Management of patients presenting with anticoagulation-related major bleeds includes 3-factor and 4-factor prothrombin complex concentrates (3F-PCC, 4F-PCC), and recombinant factor VIIa. The efficacy and safety of 4F-PCC in a larger patient population is needed. Additionally, its use in FXa inhibitor-related major bleeds is limited. In May 2016, our institution created an anti-thrombotic reversal guideline. Our goal is to examine the safety and efficacy of its use for patients on anticoagulation requiring urgent reversal for major bleeding or an invasive procedure.

Methods: This study is a retrospective chart review of all patients receiving PCC product(s) from May 2016 to April 2017. A patient list generated through Cerner prescribing reports for all PCC administration will be utilized. Patients' electronic medical record will be reviewed from the day of admission and will end upon hospital discharge in order to obtain all safety and efficacy outcomes. The primary objective is to examine the efficacy of PCC products for warfarin or FXa inhibitor reversal. The primary objective will be determined for warfarin based on a decrease in INR to < 1.3 at 0.5 hours after infusion of PCC product, clinical assessment of bleeding cessation, and ≥ 1 blood product (FFP) within 12 hours after administration for warfarin. The primary objective will be determined for FXa inhibitors based on clinical assessment of bleeding cessation and ≥ 1 blood product (FFP) within 12 hours after administration. Secondary objectives will examine the safety of PCC products through collecting data on adverse events such as the development of thrombosis. An additional secondary objective will be to examine the time to order and administration of PCC after the implementation of the Antithrombotic Reversal Guideline and Order Set at our institution.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-264

Poster Title: Characterizing Clostridium difficile Infection Rates, Risk Factors, and Outcomes in Hematopoietic Stem Cell Transplant Recipients

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Additional Author (s):
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Purpose: The main purpose of the study is to identify the incidence, risk factors for and outcomes for Clostridium difficile infections in patients undergoing hematopoietic stem cell transplantation at the University of Illinois Hospital. Additionally, we are aiming to evaluate transplant-related morbidity and mortality outcomes in those who develop Clostridium difficile infection.

Methods: This study is a retrospective chart review, where we will identify patients who underwent hematopoietic stem cell transplantation (HSCT) at the University of Illinois Hospital (UIC). We anticipate about 900 patients who underwent HSCT and about 150 patients who developed a Clostridium difficile infection. Patient data will be collected through a Cerner generated report identifying patients who have undergone HSCT at UIC. Data collected from the manual Cerner reviews will be stored in the REDcap program, which will only be accessible to the PI and co-investigators with unique passwords and usernames. Any Microsoft Excel documents used for data collection will be created with this numeric coding system and will NOT include any patient identifiers or PHI. These reports will be stored in university's "H" drive under the principal investigator's personal desktop and visible only to the principal investigator. Disposal of the Cerner prescribing report will occur prior to start of data analysis.
We will be collecting data on patients from January 1, 2005 through July 31, 2015.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-265

Poster Title: Comparative nephrotoxicity of aminoglycosides and polymyxins during treatment of multidrug-resistant Gram-negative infections

Primary Author: Jamie Micheletto, University of Illinois at Chicago (UIC) College of Pharmacy, IL; **Email:** jmichel@uic.edu

Additional Author (s):
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Alan

Purpose: The increasing prevalence of multidrug-resistant (MDR) Gram-negative pathogens has introduced numerous challenges for healthcare providers when treating these patients. Due to a lack of therapeutic options, there has been resurgence in the use of older antibiotic classes including polymyxins (colistin and polymixin B) and aminoglycosides. These agents are known to cause nephrotoxicity. There have been studies that have assessed the nephrotoxic effects in patients receiving aminoglycosides or polymyxins but few comparative data in similar patient populations. The purpose of this study is to compare the nephrotoxic effects of these last-line antibiotic agents in a multicenter, retrospective study.

Methods: Patients will be identified through both University of Illinois Hospital & Health Sciences System and Northwestern Memorial Hospital records based upon antibiotic use specifically with aminoglycosides, polymyxin B or colistin for the treatment of a multidrug-resistant (MDR) Gram-negative bacterial infection from 01/01/2006 to 08/01/2016. Patients excluded from the study are those who are less than 18 years of age, with end stage renal disease (ESRD) requiring hemodialysis or anyone requiring renal replacement therapy within 24h of therapy initiation. Patients who have been initiated on both an aminoglycoside and a polymyxin to treat their infection will also be excluded. Patient demographics and past medical history will be collected from hospital admission in which patient was being treated for the MDR Gram negative. Patients will be stratified based on the antibiotic they received (aminoglycoside, polymyxin B, or colistin) and patient groups will be compared. Nephrotoxicity will be assessed via the RIFLE (risk, injury, failure, loss, end-stage renal disease) classification.

Baseline serum creatinine will be the most recent level prior to initiation of antibiotics. Kidney function will be assessed every 24 hours after initiation of the antibiotic agent and will continue to be assessed 7 days after discontinuation. Secondary endpoints include microbiologic cure and clinical cure.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-266

Poster Title: Sodium Bicarbonate Use for In-Hospital Cardiac Arrests

Primary Author: Kevin Chang, University of Illinois at Chicago College of Pharmacy, IL; **Email:** kchang29@uic.edu

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Purpose: The use of sodium bicarbonate to correct acidosis in cardiac arrests has become controversial. Trials studying bicarbonate use in cardiac arrests have been conflicting, with multiple studies finding a mixture of benefit, no benefit, or harm. The 2015 Advanced Cardiac Life Support guidelines do not recommend the routine use of sodium bicarbonate during cardiac arrests. The primary objective of this evaluation is to determine if sodium bicarbonate use during in-hospital cardiac arrests increases the amount of epinephrine required. Secondary objectives will evaluate various other patient outcomes.

Methods: This retrospective, cohort evaluation will be submitted to the Institutional Review Board for approval. In-hospital cardiac arrest patients will be initially identified for the evaluation via a REDCap database containing a list of all patients who experienced a cardiac arrest at University of Illinois Hospital and Health Sciences System from 2014 to present. Data will then be extracted from each patient's cardiac arrest documentation from the hospital electronic medical record. Baseline characteristics including age, sex, race, past medical history, hospital location, number, type, and location of intravenous (IV)/intraosseous (IO) accesses, and baseline laboratory values will be collected. The primary outcome will be the difference in the total number of doses of IV/IO epinephrine pushes administered during the cardiac arrest in patients that receive sodium bicarbonate compared to those that do not. Other data points that will be collected include attainment of return of spontaneous circulation, duration of cardiac arrest, whether the patient was discharged from the hospital, discharge disposition, outcomes dependent on type of cardiac rhythm, medications other than epinephrine and bicarbonate used during the cardiac arrest, total milliequivalents of bicarbonate administered, total milligrams of epinephrine administered, and impact of time-of-administration when sodium bicarbonate was the medication administered directly before or after epinephrine. All

data will be recorded confidentially with no patient identifiers in REDCap and will be evaluated using descriptive and comparative statistics.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-267

Poster Title: Evaluation of VTE Prophylaxis in Patients s/p Total Joint Arthroplasty at UIH

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Additional Author (s):
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Purpose: At UIH, orthopedic patients are typically treated with aspirin, warfarin, or fondaparinux post-operatively. The decision on which method of VTE prophylaxis to use is based upon the type of procedure, patient specific factors, and is ultimately up to the discretion of the physician. Despite patients being treated with guideline recommended pharmacologic agents for prophylaxis post-operatively, VTE rates remain high. This project will serve as a baseline foundation for development of a standardized orthopedic protocol. This will benefit UIH's patient population, through the identification of areas of improvement that may be made in order to potentially prevent VTE events.

Methods: The study protocol will be submitted to an IRB for approval prior to initiation. A list of patients will be compiled using ICD-9 or ICD-10 codes for orthopedic procedures. A patient will be eligible for enrollment if they received a TKA, THA, or a revision of either of these surgeries between 01/01/2012 and 12/31/2015. Estimated sample size is 300 patients. Data points to be collected are: patient baseline characteristics (demographics, weight, laboratory results, comorbidities, presence of a concomitant blood thinning medication ie. anticoagulant, antiplatelet, NSAIDs, SSRI, presence of concomitant hormonal therapy, dates of admission/surgery/discharge), surgical and post-operative care information (type of surgery performed, name of orthopedic service, type of anesthesia, medications used for pain control, tranexamic acid utilization), VTE prophylaxis (medication name, dose, time to initiation, intended duration, mechanical prophylaxis use, time to mobilization, anticoagulation clinic follow-up, time to therapeutic INR in warfarin treated patients), outcome data (VTE events as noted in chart/follow-up clinic appointments, diagnostic test results, bleeding events). These medical record numbers and data collected from each patient will be stored using the REDCap

system, which is a secure web application designed for database storage. This allows patient confidentiality to be maintained, while also allowing securely coded patient information to be exported for the purpose of data analysis. As this is a retrospective chart review, a waiver of informed consent will be sought.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-268

Poster Title: Incidence of postoperative venous thromboembolism at the University of Illinois Hospital after implementation of prophylactic order set

Primary Author: Sarah Hausner, University of Illinois at Chicago College of Pharmacy, IL; **Email:** hausner@uic.edu

Additional Author (s):
Keri Kim

Purpose: In April of 2016, the University of Illinois Hospital (UIH) implemented a deep vein thrombosis (DVT) prophylaxis order set with the goal of reducing incidence of postoperative DVTs and (pulmonary emboli) PEs. The order set included 4 components with 1 assessment and 3 orders: DVT risk assessment, mobility order, pharmacologic prophylaxis order, and mechanical prophylaxis order. This study is needed to evaluate the efficacy of the implemented DVT prophylaxis order set for postoperative patients at UIH and identify other potential areas for improvement to further decrease the rate of postoperative DVT/PE.

Methods: This study will be a retrospective, cohort study evaluating the compliance of 3 forms of thromboprophylaxis regimen before and after the implementation of the DVT prophylaxis order set, which was introduced in April 2016. The current study will collect data beginning April 2016 because data prior to April 2016 has already been collected. Postoperative patients over the age of 18 with venous thromboembolism (VTE**)** will be included and will be identified based on the Agency for Healthcare Research and Quality Patient Safety Indicator 12: Postoperative Pulmonary Embolism or Deep Vein Thrombosis Rate, which is provided by Vizient (formerly known as University HealthSystem Consortium, UHC) quarterly. Data collection will include demographic data, risk factors for VTE, and thromboprophylaxis regimen.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-269

Poster Title: Palatability of effervescent vs standard oral n-acetylcysteine: Is it worth all the fizz?

Primary Author: Anne Marie Guthrie, University of Illinois at Chicago College of Pharmacy, IL; **Email:** guthrie@uic.edu

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Purpose: Acetaminophen overdose continues to be one of the most common medication exposures reported to the US Poison Control Centers. Standard n-acetylcysteine is known for its strong sulfur taste and smell, which makes oral administration challenging in the setting of acetaminophen overdose. Recently, the Food and Drug Administration approved a flavored, effervescent n-acetylcysteine tablet for the treatment of acetaminophen poisoning. A palatability study will determine how this product compares to standard oral n-acetylcysteine diluted in different beverages.

Methods: This is a prospective, cross-over, palatability study. Up to 55 healthy volunteers will be enrolled to ensure that 45 participants complete the study. Informed consent will be obtained prior to study participation. Subjects will participate in three separate sessions: one session will be dedicated to tasting effervescent n-acetylcysteine in water and effervescent n-acetylcysteine in lemonade; one to tasting standard n-acetylcysteine in Fresca, standard n-acetylcysteine in Coca-Cola, and standard n-acetylcysteine in cranberry juice; and one session for smelling all of the product mixtures. Each session will be conducted on separate days. For tasting sessions, ten milliliters of the solution will be placed in an opaque cup with lid and straw. Participants will be asked to sample enough of each mixture to evaluate the taste and score the palatability using a visual analog scale with zero being least offensive and ten being most offensive. For smelling sessions, the solutions will be placed in glass beakers that have been covered with paper to de-identify each solution. After smelling each mixture, the subject will score the smell using a visual analog scale. Data collection will include visual analog scale scores from all sessions and be managed using the secure data system RedCap. Data analysis will be completed using Friedman ANOVA and Wilcoxon signed rank test.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-270

Poster Title: Making the best choice: norepinephrine vs phenylephrine for intraoperative use

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Additional Author (s):
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Purpose: Intraoperative hypotension has been linked to acute kidney injury, cardiac complications, myocardial infarction, and mortality. Historically, phenylephrine has been the vasopressor of choice by anesthesiologists. The objective of this retrospective study is to examine the intraoperative use of norepinephrine vs. phenylephrine, and to identify patients' hemodynamic response to each vasopressor. Specifically, we will determine if, based on perioperative variables, one vasopressor provides better hemodynamic control.

Methods: Pending the approval of the institutional review board, a retrospective chart review will be done examining patients who underwent total hip arthroplasties, colo-rectal surgery, or gastro-intestinal surgery and received norepinephrine or phenylephrine for intraoperative hypotension. Additional inclusion criteria aside from those aforementioned are age 18 or greater, surgery case within the last 3 years, intraoperative use of EV1000 hemodynamic monitor, and surgery duration of three hours or greater. Exclusion criteria are emergent surgery and lack of Foley catheter placement. Patients will be divided into three groups: those who received norepinephrine, phenylephrine, or both. The electronic medical records of these patients will be utilized to gather background and surgery specific data metrics. These will include general patient demographics, co-morbid conditions, blood pressure (BP) related home medications, baseline BP, type of surgery, length of operation, mode of ventilation, ins and outs (to include all fluids, blood products, medications administered, estimated blood loss, urine output), heart rate, blood pressure, mean arterial pressure, stroke volume, stroke volume index, and cardiac output. All data will be recorded without patient identifiers and maintained confidentially. Statistical analysis will be done to assess patients' demographics, MAP variations, and clinical outcomes associated with intraoperative PE vs NE use. Excel code will be used to collect area under the curve (AUC) for each patient's intraoperative hemodynamics.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-271

Poster Title: Long-term outcomes of kidney transplant patients receiving treatment for biopsy proven vs. empiric therapy for rejection

Primary Author: Ashley Loethen, University of Illinois at Chicago College of Pharmacy, IL; **Email:** aloeth2@uic.edu

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Purpose: A primary concern for kidney transplant recipients is rejection of the graft. Renal biopsies are still considered the mainstay of therapy for diagnosing rejection. The biopsy results are used to help guide treatment. Knowing this, there are still patients who receive empiric rejection treatment. The objective of this study is to see if there are long-term effects on graft function with empiric rejection treatment compared to biopsy proven rejection treatment.

Methods: All kidney transplant recipients will have their charts reviewed to see if they qualify for this study. They will qualify if they have had a per cause biopsy or empiric rejection treatment. After the selection of patients is complete a full chart review will be conducted and the following data will be collected: age, induction therapy, type of donor, race, risk factors for rejection, induction therapy, maintenance immunosuppression, level of tacrolimus/cyclosporine, past rejection history, height, weight, BMI, time post transplant, serum creatinine before and after, fluid status, indications for biopsy, indications for empiric therapy, biopsy results, complications, documented reason for no biopsy, treatment post biopsy, empiric treatment, graft survival, graft function at 3 and 6 months, return to baseline serum creatinine, future rejection, if no improvement from empiric treatment was a biopsy taken. Primary endpoints will be return to baseline serum creatinine and graft loss. The secondary endpoint will be the rate of biopsies post empiric treatment.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-272

Poster Title: Hydration protocol and early readmission rate in pancreas transplant

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Purpose: High early readmission rate is an issue in pancreas transplant and it is commonly associated with dehydration. The home hydration regimen was implemented at University of Illinois Hospital (UIH) in 2012 in pancreas transplant patients to prevent dehydration-related early readmission.The purpose of this study is to analyze whether the implementation of a home hydration regimen can result in 50% reduction in early readmission rate and to determine whether it can become a standard of care in pancreas transplant at UIH.

Methods: This is a retrospective, chart-review, historic-control study. Adult patients who received whole pancreas transplant (either simultaneous pancreas and kidney, pancreas alone, or pancreas after kidney) at UIH from 01/01/2008 to 09/30/2016 would be included as eligible participants. The primary outcome of this study is to determine whether the implementation of hydration protocol resulted in reduction of early readmission rate. Early readmission rate is defined as any hospitalization in the first 14 days following pancreas transplantation. ER visit will be collected but excluded from the category of “early readmission”. The secondary outcomes are to identify the compliance with protocol implementation; to investigate the reason of readmission; to establish the risk factors of early readmission; to assess the safety of central line placement and associated issues for home hydration infusion; and to justify the cost-effectiveness of hydration regimen.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-273

Poster Title: Assessment of the quick sepsis-related organ failure assessment in the initial evaluation of patients with suspected infection

Primary Author: Rachel Murdock, University of Illinois College of Pharmacy, IL; **Email:** murdockr@uic.edu

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Purpose: The Third International Consensus Definitions for Sepsis (Sepsis-3) revised the definition of sepsis to include an assessment of organ dysfunction with the sepsis-related organ failure assessment (SOFA) score. The authors also devised an abbreviated quick SOFA (qSOFA) scoring system to identify patients with suspected infection at risk for poor outcomes. Previous sepsis definitions emphasized inflammation, with the systemic inflammatory response syndrome (SIRS) criteria being a key component of the evaluation of patients with suspected infection. The purpose of this research is to compare qSOFA and SIRS in the initial assessment of potentially infected patients.

Methods: This is a retrospective, observational cohort study of adult patients presenting to the emergency department with suspected infection, as identified by the presence of orders for blood cultures, between January 1, 2014 and September 1, 2016. Patients will be identified by a query of microbiology orders and data will be extracted from the electronic medical record following institutional review board approval. Patients who are receiving systemic antibiotics for previously diagnosed infection will be excluded. Included patients will be evaluated for their highest qSOFA and SIRS criteria score within 6 hours of the order for blood cultures, and classified according to qSOFA positivity (2 of 3 criteria) and SIRS positivity (2 of 4 criteria). The primary endpoint is the incidence of microbiologically-confirmed infection. Secondary endpoints include the concordance of SIRS and qSOFA positivity, the incidence of SEPSIS-3 defined sepsis and septic shock, and progression to critical illness.

Results: N/A, this research is in progress

Conclusion: N/A, this research is in progress

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-274

Poster Title: Sepsis Evaluation Following Central Line Discontinuation in the Neonatal Intensive Care Unit

Primary Author: Sana Said, University of Illinois College of Pharmacy, IL; **Email:** ssaid3@uic.edu

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Purpose: Central line placement is a well-described risk factor for the development of sepsis in neonates. There is an increased risk of sepsis in the 72 hours following removal of central lines. Different strategies to combat the risk of central line infections have been utilized, including the administration of prophylactic antibiotics at the time of removal. The purposes of this study are to describe the incidence of sepsis and the evaluation for sepsis in neonates following central line removal in the neonatal intensive care unit and to determine the risk factors associated with central line infections before implementation of prophylactic antibiotics.

Methods: This is a retrospective chart review of electronic medical records. Neonates with central lines from June 1, 2013 to August 31, 2016 will be assessed. Neonates who die while the central line is still placed, those who are transferred from or to a different hospital, and those receiving antibiotics at the time of central line removal that are continued more than 24 hours after line discontinuation will be excluded. The number of neonates with sepsis and sepsis evaluation performed will be measured. This will be done through examining the start of antibiotics from the time of removal of the central line to 72 hours after discontinuation. Sepsis evaluation labs and cultures will be assessed. Antibiotic use from birth will be recorded to evaluate any protective effects afforded by their use. Complete histories of central lines including type of line, date of insertion, date of removal, reason for removal, and presence of previous lines will be recorded. Comorbidities and other factors known to be risk factors of sepsis (necrotizing enterocolitis, surgical interventions, prior exposure to antibiotics, patient demographics and anthropometrics, and total parenteral nutrition use) will also be assessed. Lastly, length of hospital stay and mortality will be examined.

Results: No results have been collected at this time.

Conclusion: No conclusions have been made at this time.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-275

Poster Title: Assessing Medication Errors and Developing Strategies to Ensure Safe Practices with the use of Oral Chemotherapy in Chronic Myeloid Leukemia Patients

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Purpose: Medication errors are relatively common with intravenous chemotherapy regimens in inpatient and outpatient settings. However; oral chemotherapy is becoming more commonly prescribed and as such, requires additional personnel training in safe medication dispensing and adequate patient education. The goal of this study is to assess the prevalence of oral chemotherapy medication errors at a tertiary care hospital in Saudi Arabia and develop strategies to ensure safe practices in the ordering and dispensing of oral chemotherapy drugs used in the treatment of Chronic Myeloid Leukemia (CML).

Methods: This retrospective chart review study will evaluate all CML patients at or over the age of 14 years receiving FDA-approved oral chemotherapy drug for CML at a tertiary care hospital in Saudi Arabia. Investigation Review Board (IRB) approval was attained at our institution in June 2016. Patients were identified through Information System Development (ISD) department at our institution. Our primary source of patient information is our hospital database and patients' medical reports. The following data will be collected: patient's age, sex, presence of comorbidities, date of CML diagnosis, quantification of BCR/ABL fusion gene in the blood, and Adverse Drug Events (ADE), secondary to CML treatment, reported by patients and/or caregivers. In order to assess the medication errors associated with patient adherence and drug-drug interactions, patients/patient caregivers will be interviewed once during the study period. Furthermore, Institute for Safe Medication Practices (ISMP) International Medication Safety Self-Assessment® for Oncology will be used to identify causes and triggers of

medication errors at our institution. Once data collection is complete, data will be collected and analyzed over a period of approximately 6 months.

Results: NA

Conclusion: NA

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-276

Poster Title: Impact of BioFire FilmArray multiplex polymerase chain reaction for blood culture identification on antimicrobial use in a community hospital

Primary Author: Alexis Boyce, Baptist Health Lexington, KY; **Email:** alexis.boyce@bhsi.com

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Purpose: The Biofire FilmArray Blood Culture Identification (BCID) Panel was implemented by the Antimicrobial Stewardship Committee at our hospital in December 2015. While previous studies have shown that the BioFire BCID Panel is a reliable test for the identification of common bloodstream pathogens, less is known about the effect of this tool on appropriate antibiotic utilization. The primary objective of this study is to determine the impact of a rapid blood culture identification tool on antimicrobial use before and after its implementation.

Methods: This retrospective chart review was submitted to and approved by the local Institutional Review Board. Patients admitted before the implementation of BioFire from January 1, 2015 through May 31, 2015 will be compared to patients admitted after the implementation of BioFire from January 1, 2016 through May 31, 2016. All inpatients 18 years of age or older who had a positive blood culture during their hospitalization will be included. Patients who expired or were discharged before final culture and sensitivity data was available will be excluded. The following data will be collected utilizing the electronic medical record system: patient age, gender, comorbidities, location prior to admission, principal diagnosis, length of hospital stay, days in the intensive care unit, source of bacteremia, antimicrobials received, infectious disease consult (yes/no), discharge diagnosis, and discharge disposition. The primary endpoint is antimicrobial use, which will be measured by calculating days of antimicrobial therapy.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-277

Poster Title: Characterization of pharmacy-initiated medication reconciliation in reducing medication errors in breast cancer patients receiving treatment in an outpatient cancer center

Primary Author: Jacqueline Norris, Baptist Health Lexington, KY; **Email:** jacqueline.norris770@gmail.com

Additional Author (s):
Megan May

Purpose: Medication reconciliation is critical for decreasing medication errors and providing safe patient care. Patients are at an increased risk of medication errors any time a new medication is initiated or they undergo a transition of care. Cancer patients are at risk due to the vast array of drug-drug interactions associated with chemotherapy agents. The purpose of this study is to determine the quantity of interventions made from a pharmacy-obtained reconciled medication list.

Methods: The electronic medical system will identify patients with breast cancer receiving treatment at Baptist Health Lexington's outpatient cancer center from September 1, 2016 to December 31, 2016. The following data will be collected: patients' age, breast cancer stage, race, chemotherapy treatment cycle, total number of medications each patient takes, number of comorbidities, and the type and number of interventions completed by pharmacy. Pharmacy personnel will interview each breast cancer patient presenting to the infusion center and obtain an accurate medication list and update information in the patients' chart. After the medication reconciliation is completed data collected will be analyzed to determine how many interventions were made on average and how many of those interventions could have resulted in serious adverse reactions if not discovered. Interventions being analyzed include: prescriptions added to or deleted from the medication list, over the counter or herbal supplements added to the medication list, drug form, dosage, or schedule discrepancies, and drug-drug interactions, including the severity of the interactions.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-278

Poster Title: Implementation and evaluation of a controlled substance auditing program in a community hospital

Primary Author: Hannah Bennett, Baptist Health Lexington, KY; **Email:** hannah.bennett@bhsi.com

Additional Author (s):
William Stewart

Purpose: The tracking of controlled substance usage and waste in a hospital is a necessary but difficult process. It is important to have a precise and efficient controlled substance auditing program in order to quickly act on possible diversion, to keep an accurate inventory, and to ensure patients are billed correctly. This study seeks to assess multiple controlled substance use-reporting systems in order to develop an effective controlled substance auditing program in a community hospital.

Methods: There will be five pre-specified areas of the hospital which will be included in the study two intensive are units, two medical-surgical floors, and the emergency department. The primary objective of this study is to characterize, evaluate, and when applicable, compare four primary controlled substance use-reporting systems in order to implement a controlled substance auditing program. The first report will be generated using a third party reporting system to identify discrepancies in controlled substance usage. Reports from both the electronic health record and the automated dispensing cabinet software will be reconciled to show instances where controlled substance medications were pulled without an associated order. Lastly, accuracy of the procurement and storage of controlled substances will be evaluated by comparing invoices to inventory logged into the controlled substance vault. Each report will be run on a monthly basis. Secondary objectives include identifying common controlled substance use discrepancies, identifying common medications and amounts involved in controlled substance use discrepancies, the frequencies of controlled substance use discrepancies that occur in specific areas of the hospital, and how much time it will take to analyze each of the controlled substance use reporting systems.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-279

Poster Title: Evaluation of the effectiveness of urinary tract infection treatment protocol in the inpatient setting

Primary Author: Ahmed Shammisaldeen, Baptist Health Lexington, KY; **Email:** ahmed.shammisaldeen@bhsi.com

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Purpose: In 2012-2013, the local antimicrobial stewardship team developed a urinary tract infection (UTI) protocol to streamline the use of antibiotics toward appropriate empiric therapy. The UTI protocol was implemented into the previous computerized physician order entry system, but it has not yet been integrated into the current electronic medical record system. The goal of this study is to evaluate the effectiveness of the UTI protocol by measuring microbiological failure rates, length of stay, readmission rates within 30 days, and antibiotics used in treatment of UTI.

Methods: The study design involves a retrospective review of medical charts and has been approved by the institutional review board. This study will examine a six-month period where the UTI treatment protocol was active and another six-month period where the previous UTI protocol was inactive. Inclusion criteria consist of any patients 18 years and older with a primary or secondary diagnosis of UTI. Any patients who have catheter associated urinary infections, pregnancy, sepsis, or are incarcerated will be excluded. Baseline demographics will be collected for each patient including age, weight, sex, renal function, comorbidities, the length of stay, the sensitivity of the isolates, readmission rates within 30 days, and the antimicrobial therapy. The primary objective of this study is to measure and compare microbiological failure rates (the resistance of isolates to the current antibiotic therapy), average length of stay, sensitivity of the isolates from urine cultures, and readmission rates between the two time periods specified above.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-280

Poster Title: Impact of pharmacy led nursing education on current sedation practice within a community medical/surgical intensive care unit

Primary Author: John Starks, Baptist Health Lexington, KY; **Email:** john.starks91@yahoo.com

Additional Author (s):
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Amy Weir

Purpose: Society of Critical Care Medicine (SCCM) sedation/agitation guidelines currently recommend that sedatives/analgesics be titrated to light sedation, defined as a Richmond Agitation Sedation Scale (RASS) greater than or equal to -2, rather than deep sedation for patients requiring invasive mechanical ventilation. Studies have shown positive outcomes from light sedation on intensive care unit (ICU) length of stay, hospital length of stay, days on mechanical ventilation, and other targeted metrics. The primary objective of the study is to both define current sedation practice within a community medical/surgical ICU and insure compliance with guideline recommendations through a pharmacy driven nursing education.

Methods: A protocol outlining an observational retrospective chart review was submitted to the Institutional Review Board for approval. The electronic medical record was utilized to identify patients that are mechanically ventilated for greater than 48 hours who did not have contraindications for light sedation. Exclusion criteria included acute neurologic injury, neuromuscular blocker administration, alcohol dependence, external cooling, and death within 72 hours. Data pulled from the electronic medication record will be utilized to evaluate compliance with sedation/agitation practice guidelines and develop a targeted education based on possible deficits in recommendations. Along with sedation practice analysis, billed medication quantities will be compared pre and post education to assess any changes in drug utilization and validate the sedation/agitation practice education provided. Current sedation/agitation practices were assessed using the Richmond Agitation Sedation Scale (RASS). The percentage of time spent within light sedation will be the primary outcome assessed. Secondary outcomes include benzodiazepine use, analgesia first-sedation (analgosedation), days on mechanical ventilation, ICU length of stay, hospital length of stay, ICU mortality, hospital mortality, and re-intubation events. Post-evaluation, the nursing staff of a

medical/surgical ICU will be provided sedation/agitation education based on gaps in current practice pertaining to guideline recommendations. Post education, a second retrospective chart review will be completed to compare the effect of the targeted sedation/agitation education.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-281

Poster Title: Implementation of a meropenem de-escalation protocol utilizing prospective audit and feedback in a community hospital

Primary Author: Mallory Megee, Baptist Health Lexington, KY; **Email:** mallory.megee1@BHSI.com

Additional Author (s):
Layla Marefat

Purpose: Current Infectious Diseases Society of America (IDSA) recommendations include prospective feedback and review as a core component of antimicrobial stewardship teams. This mechanism of review and feedback serves to help tailor antimicrobial agents and decrease excessive use of unwarranted broad-spectrum antibiotics. Decreasing meropenem usage has become a focus area for our local antimicrobial stewardship committee with the goal of preventing the development of multi-drug resistant organisms at our institution.

Methods: This study was approved by the institutional review board to take place from September 1, 2016 through March 31, 2017. A prospective review will be performed on eligible adult, non-ICU patients on meropenem therapy with definitive cultures that allow alternate therapy or who are receiving empiric therapy for > 72 hours. The pharmacist will perform daily audits on meropenem usage and attend biweekly antimicrobial stewardship committee meetings to discuss eligible patients. Eligibility is determined by using a physician approved de-escalation protocol which includes culture results and patient specific factors such as normalization of WBC, CRP, and lactic acid as well as clinical improvement as determined by the primary or infectious disease physician. The primary outcome of this study is to evaluate the impact of a meropenem de-escalation protocol using antimicrobial stewardship team intervention on meropenem usage. Secondary outcomes include pharmacist intervention acceptance rate, hospital length of stay, duration of antibiotic therapy and mortality at hospital discharge.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-282

Poster Title: Development of a tool for prevention of inpatient falls based on Beers Criteria and STOPP: A pilot study.

Primary Author: Vishal Patel, Baptist Health Louisville, KY; **Email:** patelvishal235@gmail.com

Additional Author (s):
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Purpose: Falls are a leading source of accidental death in people greater than age 65. The Beers criteria and Screening Tool of Older Person's Prescriptions (STOPP) have been developed to help identify potentially inappropriate medications (PIMs) in patients age 65 or older. However, the list of drugs provided by these two tools is exhaustive and primarily focuses on outpatient and long-term care settings. Many are not realistic targets for potential interventions in inpatient environments. This study aims to create a more focused list of drugs to target for discontinuation/medication optimization within an inpatient population at a large community hospital.

Methods: This study is a two phase study. The first phase will involve the development and creation of a tool to assist pharmacists in recommending interventions regarding potentially inappropriate medications (PIMs). This phase will consist of a literature review as well as a voluntary survey. Medications published in the Beers/STOPP criteria will be compared with other evidence to identify the highest risk PIMs. Additionally, a survey will be conducted among admitting physicians to gain insight into prescribing practices that could impact PIMs. This survey will run over the course of two weeks and be administered via SurveyMonkey. The results of the survey will be analyzed and combined with the literature review to provide a streamlined list of PIMs. This list will be used to build the tool to assist pharmacists in recognizing PIMs targeted for inpatient populations.
The second phase is a pilot study evaluating tool usage within an inpatient setting. Patients will be selected based on the inpatient floor during their stay. Pharmacists will use the tool previously built in phase one to identify PIMs and provide recommendations to the attending physician. Patients will be randomized; data collected will include the number of falls, the

number of interventions made and the number of accepted interventions. Primary endpoints include acceptance of pharmacist intervention; secondary endpoints include the effect of tool usage on number of inpatient falls.

Results: Expected by spring 2017.

Conclusion: Expected by spring 2017.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-283

Poster Title: Impact of pharmacist counseling on congestive heart failure 30-day readmissions at a community hospital

Primary Author: Radhika Patel, Baptist Health Louisville, KY; **Email:** radhikap88@yahoo.com

Additional Author (s):
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Shelly O'Bryan
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Purpose: Congestive heart failure (CHF) is the leading cause of mortality in the United States. CHF affects 5.7 million adults and is responsible for one in nine adult deaths. Additionally; CHF patient hospital readmission rates remain high, where the current national average for CHF 30-day readmission rates is 21.9%. The purpose of this study is to determine the incidence of 30-day readmission in CHF patients before and after implementation of pharmacist provided inpatient counseling.

Methods: This is a retrospective, single center, cohort study, involving chart review from April 2016 to November 2016. A new clinical service wherein pharmacists provide inpatient counseling to CHF patients was implemented in August 2016. This study will evaluate the impact of this new service by comparing the rate of 30-day hospital readmission between the group of CHF patients who received pharmacist inpatient counseling versus the CHF patients who did not receive counseling. Secondary outcomes include the amount of time required by the pharmacist to conduct an inpatient counseling session, the number of pharmacist interventions, emergency department visits within 30 days after discharge, and factors associated with prevention of 30-day readmission will also be analyzed in this study. Eligible patients for inclusion are at least 18 years old, admitted to the hospital with a history or admission diagnosis of heart failure. Prisoners, pregnant women, patients with altered mental status, and patients who will be discharged to skilled nursing facilities or long-term care facilities will be excluded from the study. In this study, all continuous data will be analyzed using student's t test and nominal data will be analyzed using Chi-square test. Factors associated with prevention of 30-day readmission will be analyzed by univariate and multivariate logistic regression.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-284

Poster Title: Evaluating carbapenem use before and after providing carbacarbapenem-resistant Enterobacteriaceae education to physicians

Primary Author: Amy Staples, Baptist Health Madisonville, KY; **Email:** amyleigh2189@gmail.com

Additional Author (s):
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Jeffrey Cavanaugh

Purpose: Carbapenem-resistant Enterobacteriaceae (CRE) have become a global healthcare problem over the last few decades. Resistance to carbapenems was first seen in Klebsiella pneumoniae and has passed its plasmid-born resistance to several species of the Enterobacteriaceae family, including multi-drug resistant organisms (MDRO). Studies have shown that patients previously treated with carbapenems are at a much higher risk of colonization or infection with CRE. The purpose of this study is to determine if providing CRE education to physicians affects the percentage of patients that receive carbapenems during their hospital stay.

Methods: This study will be submitted to the Institutional Review Board for approval. The percentage of patients receiving at least one dose of a carbapenem during their hospital stay before providing education will be determined. Physicians will be provided brief, general education on CRE with an emphasis on prevention. The physicians included in the education component of this study will be limited to hospitalists and family practice medical residents and faculty. The percentage of patients receiving at least one dose of any carbapenem during their hospital visit will be determined after educating all physicians. This rate will be followed for several months to track changes.

Results: NA

Conclusion: NA

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-285

Poster Title: Impact of patient education on hospital readmission rates in a rural community teaching hospital

Primary Author: Carson Schlich, Baptist Health Madisonville, KY; **Email:** carson.schlich@bhsi.com

Additional Author (s):
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Jeffrey Cavanaugh
Kimberly Webb

Purpose: Readmission rates are an important area for hospitals to continually make improvements. Many factors can contribute to patient readmissions, such as education, new disease onset, or previously failed treatments. This project seeks to evaluate and determine the impact of patient education on hospital readmission rates.

Methods: Patients/caregivers located on a pre-determined med-surg pilot unit in a rural community hospital will be surveyed on day 3 of admission to determine level of education regarding their disease states and/or medications. Surveys will be conducted with a standardized form that was developed by team members composed of a physician champion, nursing, clinical dietitian, physical therapy, pharmacy, case managers, and a social worker. The trial will be conducted from September 2016 through November 2016. A sample size of least 100 patients will be obtained during the trial period. Upon completion of data collection, historical and post implementation readmission rates will be compared. This data will then be correlated to patient education levels.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-286

Poster Title: Utilization of sedation agents in the critical care unit of a rural community hospital

Primary Author: Patrick Roland, Baptist Health Madisonville, KY; **Email:** patrick.roland@bhsi.com

Additional Author (s):
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Matt Cavanaugh

Purpose: According to the 2013 Clinical Practice Guidelines for the Management of Pain, Agitation, and Delirium in Adult Patients in the Intensive Care Unit, the Richmond Agitation Sedation Scale and the Sedation Agitation Scale are the most valid and reliable sedation assessment tools for measuring quality and depth of sedation in adult ICU patients. Our facility's sedation order set includes the Ramsay Scale. The primary objective of this study is included, but not limited to, assessing the utilization of sedation agents listed in our sedation order sheet for ventilated patients as we implement the Richmond Agitation Sedation Scale.

Methods: This study will be submitted to the institutional review board for approval. A retrospective chart review will be performed on patients admitted from September 1, 2015 to September 1, 2016. This review will focus on the usage and indication of agents in our facility's current sedation order sheet for ventilated patients. The selected agents include, but are not limited to, midazolam, lorazepam, propofol, dexmedetomidine, morphine, hydromorphone, and fentanyl. Any incidental findings will also be included in the review. These findings will be utilized to reinforce the adherence to sedation guidelines and recommended monitoring parameters for sedatives used in the critical care setting. Results of this review will be presented to applicable staff and any revisions made to the order set will require focused education.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-287

Poster Title: The Impact of a Pharmacist-Reviewed Medication Reconciliation Process within a State Psychiatric Hospital

Primary Author: Courtney Newby, Central State Hospital, KY; **Email:** cnewby@sullivan.edu

Additional Author (s):
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Purpose: The purpose of this study will be to determine the most common medication variances seen within our hospital. After identifying the most commonly seen variances, we will determine the reason for the errors and implement educational interventions to the hospital staff in efforts to correct common variances. After implementing education, we will again review medication variances and asses if there are any changes after educational implementation.

Methods: Data collection and analysis will commence upon IRB approval at Central State Hospital (CSH) and the Kentucky Cabinet for Health and Family Services. This study will be retrospective and prospective in nature. Retrospective data collection will include the time frame from April 2015 to April 2016. Initially, past charts will be reviewed for any commonly seen errors during the medication reconciliation process (i.e. missing or incorrect home medications, inappropriate indications). By identifying these common errors, we will formulate educational sessions for our physicians and nursing staff. After implementation of an educational series, we will analytically review patient charts to determine if a pharmacy-reviewed medication reconciliation process decreases the number of medication variances within a state psychiatric hospital.

Results: To be presented at ASHP Midyear Regional Meeting.

Conclusion: To be presented at ASHP Midyear Regional Meeting.

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-288

Poster Title: Chronic obstructive pulmonary disease (COPD) discharge prescribing prior to and post implementation of a pharmacist-driven, evidence-based protocol in a rural community hospital setting

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Additional Author (s):
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Kourtney Shewmaker
Brett Vickey
Allison Williams

Purpose: At 10.4%, Kentucky has the highest COPD prevalence in the nation; nearly 380,000 Kentuckians have been diagnosed. Failure to treat high-risk COPD patients according to GOLD guideline treatment regimens may lead to inadequate therapy and increase risk of hospital readmission. The primary objective of this research is to evaluate and compare discharge prescriptions for COPD patients to Global Initiative for Chronic Obstructive Lung Diseases (GOLD) guidelines pre- and post-implementation of a pharmacist-driven discharge protocol. A secondary objective will be to identify patient-reported barriers to filling prescribed COPD discharge prescriptions.

Methods: This study has been approved by the Institutional Review Board. A retrospective chart review will be completed to establish baseline-prescribing habits of COPD medications upon discharge. Data collected will include patient medical record number, age, sex, race, drug allergies, provider, COPD medications prescribed at discharge, and modified COPD Assessment Test (CAT) score. A pharmacist-driven, evidence-based protocol will be developed based on current GOLD first-line recommendations. After implementation of the protocol, concurrent review of medical charts will be completed to identify COPD patients meeting inclusion criteria. Once identified, the patients will be asked for written informed consent. The principal investigator or designee will survey the participants about current symptoms using a modified version of CAT. Dependent upon the score, this assessment will place COPD patients in one of two possible classes as outlined by GOLD guidelines, and ultimately dictate the medications

prescribed at discharge. Five additional questions will be asked that will help identify patient perception of their clinical status and any barriers reported in obtaining or complying with COPD medications. During the study period, the discharging pharmacist will review prescriptions and implement changes as necessary per protocol to meet GOLD guidelines. An evaluation and comparison will be made between COPD discharge medications and GOLD guidelines recommendations to determine appropriateness. Comparisons will be made between discharge prescriptions for COPD patients pre- and post-implementation of the protocol.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-289

Poster Title: Impacting antimicrobial stewardship in a community hospital through the use of BioFire FilmArray®

Primary Author: Chelsea Stamper, Ephraim McDowell Regional Medical Center, KY; **Email:** cegoodman@emrmc.com

Additional Author (s):
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Purpose: BioFire FilmArray® technology allows for rapid pathogen identification of blood culture pathogens through the use of polymerase chain reaction (PCR) testing. In theory, more rapid identification of the organism should allow for less empiric treatment days and a faster time to treat with an appropriate targeted antimicrobial regimen. The primary objective of this research is to compare the duration of empiric antibiotic therapy to the duration of targeted antibiotic therapy pre- and post- implementation of the BioFire FilmArray® technology in a community hospital. A secondary objective is to evaluate the accuracy of the BioFire FilmArray® technology compared to plated specimens.

Methods: This study is a retrospective medical chart review of adult patients (age ≥ 18) who had positive blood cultures that were tested using the BioFire FilmArray® technology at Ephraim McDowell Regional Medical Center (EMRMC) in Danville, Kentucky. A report from the electronic medical record will be generated for all inpatient adults with positive blood cultures between March 1st, 2015 and September 30th, 2015. This report includes those patients prior to the implementation of the BioFire FilmArray® technology. A second report will be generated for all adult patients who had positive blood cultures between March 1st, 2016 and September 30th, 2016. This report includes those patients post implementation of the BioFire FilmArray® technology. Data collected will include patient age, blood culture results, number of days of empiric antibiotic therapy, number of days of targeted antibiotic therapy, total number of days of antibiotic therapy, accuracy of BioFire FilmArray® results, and length of stay. If population numbers exceed that needed for significant significance and/or power, participants will be randomly selected using a random number generator. All the data collected for this study will

be removed of any subject identifiers and will be maintained confidentially. This study design has been approved by the Ephraim McDowell Regional Medical Center Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-290

Poster Title: Evaluation of influenza vaccine screening and administration rates in a single academic pediatric medical center

Primary Author: Savannah Gulley, Kosair Children's Hospital, KY; **Email:** savannah.gulley719@gmail.com

Additional Author (s):
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Bethany Wattles
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Purpose: Influenza in pediatric patients leads to illness, hospitalization, and possibly death. The best way to prevent influenza is through vaccination. In 2014, the Centers for Disease Control and Prevention reported that roughly 50% of patients aged six months to seventeen years received their annual influenza vaccine (AIV). Children hospitalized during influenza season should receive an AIV prior to discharge, but despite institutional nursing protocols, children are remaining unvaccinated. This study serves to assess the compliance of nursing staff screening and administration of AIV to eligible patients.

Methods: This is a quality improvement project exempt from institutional review board approval, which serves to evaluate the compliance of nursing staff AIV screening and administration. Secondary objectives will include why AIV was not administered, compliance rates between different hospital units, and a nursing survey of barriers to vaccination. Data will be collected from September 15, 2016 to November 15, 2016 at Kosair Children's Hospital. Patients aged six months to seventeen years of age, who have an AIV order, and are not located in the emergency department or an intensive care unit will be included. Data to be collected on patients includes age, hospital unit, compliance with administration of AIV, and documented reason to not vaccinate. An electronic survey will be sent to nursing staff in order to identify perceived barriers to vaccination. Evaluation of data will include descriptive statistics to assess primary and secondary objectives.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-291

Poster Title: Assessment of high-dollar medication waste at a pediatric institution

Primary Author: Sarah Mitchell, Kosair Children's Hospital, KY; **Email:** sarah.mitchell@nortonhealthcare.org

Additional Author (s):
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Purpose: The increasing use of high cost biologic agents and chemotherapeutic medications in pediatric patients is associated with a growing problem of medication wastage. This study will examine the cost associated with chemotherapy and monoclonal antibody waste in a single pediatric institution. This information will then be used to assess the cost-effectiveness of various waste-reducing methods including the implementation of a closed-system transfer device for use during medication preparation.

Methods: This quality improvement project is exempt from IRB approval. Vials of chemotherapeutic agents and monoclonal antibodies that would otherwise be wasted will be collected from September to October of 2016. Medication vials will be measured to determine remaining medication and this waste will be recorded on a weekly basis. Waste associated cost will be determined using purchasing history from the pharmacy wholesaler database. Descriptive statistics will be used to analyze this cost information and extrapolate to a yearly cost of chemotherapy and monoclonal antibody waste for the hospital. Medications with the highest volume of waste as well as the highest cost of waste will be identified. This information will be used to examine the feasibility and cost-effectiveness of implementing a closed system transfer device for medication preparation and other methods for limiting waste such as utilization of smaller vial sizes or extended stability testing on the most expensive agents.

Results: n/a

Conclusion: n/a

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 9-292

Poster Title: Cost-effectiveness of filgrastim biosimilar use in a healthcare system

Primary Author: Kendra Sanderson, Kosair Children's Hospital, KY; **Email:** kendra.sanderson@nortonhealthcare.org

Additional Author (s):
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Purpose: Granulocyte colony stimulating factor (G-CSF) analogues such as filgrastim promote production, maturation, and activation of neutrophils. They are commonly used to hasten neutrophil recovery after myelosuppressive chemotherapy and prevent complications associated with neutropenia. The first FDA approved biosimilar was released in 2015 after phase III study results demonstrated equivalence of filgrastim-sndz with regard to its ability to increase absolute neutrophil count and CD34+ cell counts when compared with filgrastim. This study aims to identify cost savings after a system wide transition from filgrastim to filgrastim-sndz in August 2016.

Methods: This is a quality improvement project exempt from IRB approval. Monthly purchasing data for filgrastim will be collected from the system's wholesaler for each of its facilities from May through July of 2016. This cost data will be compared to monthly purchasing costs for the months of August through November of 2016 post transition to filgrastim-sndz. Descriptive statistics will be used to project the mean annual cost savings for each facility as well as for the healthcare system. In addition to cost analysis, the study will evaluate usage data at each individual institution over this timeframe. Descriptive statistics will be performed in order to assess the cost-effectiveness of biosimilar use. Specifically in the pediatric population, data will be evaluated regarding actual dose administered in micrograms and subsequent waste of filgrastim-sndz as it is only available in pre-filled syringes.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Descriptive Report

Session-Board Number: 9-293

Poster Title: Recombinant activated factor VII for refractory bleeding in pediatric patients on ECMO

Primary Author: Hillary Orr, Kosair Children's Hospital, KY; **Email:** hillary.orr@nortonhealthcare.org

Additional Author (s):
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Purpose: The purpose of this study was to evaluate the efficacy of recombinant activated factor VII (rFVIIa) for refractory bleeding in pediatric patients on extracorporeal membrane oxygenation (ECMO). The primary objective was to quantify the impact of rFVIIa on bleeding severity by evaluation of blood product administration and blood loss. The secondary objective was to assess the frequency of thrombotic events after the administration of rFVIIa warranting change in the ECMO circuit.

Methods: This was a single center, retrospective, descriptive analysis of patients admitted to the PICU at Kosair Children's Hospital from September 2013 to August 2015. Demographics were obtained from the medical record. Data pertaining to blood loss and transfused blood products administered 24 hours prior to the first dose and 24 hours after the final dose of rFVIIa was attained. Thrombotic events necessitating change in the ECMO circuit were documented.

Results: Five patients were included in the study. One patient received aminocaproic acid and one received phytonadione prior to rFVIIa administration. Discontinuation of heparin therapy occurred in two patients prior to rFVIIa administration. A median dose of rFVIIa 60 mcg/kg (range 26-90 mcg/kg) was observed among the five patients. Four patients received one dose of rFVIIa, while one patient initially administered 26 mcg/kg/dose required one additional dose. Blood loss decreased by an average of 3.52 mL/kg/hr (range 0.11-12.67 mL/kg/hr). Blood transfusions decreased by an average of 119 mL/kg (range 28.4-254.5 mL/kg). One patient developed a decrease in oxygenator efficiency, while another developed a thrombus

warranting change in the ECMO circuit. Surgical exploration was observed in one patient due to persistent hemorrhage.

Conclusion: Administration of rFVIIa during ECMO support was associated with a decrease in bleeding severity observed by a decrease in blood loss and transfusion rates and was not associated with increased thrombotic events. More robust, prospective randomized trials are needed to evaluate the efficacy of rFVIIa administration in ECMO patients.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-294

Poster Title: Retrospective evaluation of 4-factor prothrombin complex concentrate use at a regional community hospital

Primary Author: Collin Owczarzak, Owensboro Health Regional Hospital, KY; **Email:** cowczarzak17@gmail.com

Additional Author (s):
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Shannon Allcron
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Purpose: Management of patients with a major bleed while on a vitamin K antagonist (VKA) is a common clinical challenge. Historical reversal agents available for this indication include vitamin K as well as fresh frozen plasma. Approved in the United States in 2013, four-factor prothrombin complex concentrate (4F-PCC) provides urgent reversal of VKA. This reversal agent may be useful in patients who are taking a VKA and present with major, life-threatening bleeding or who require emergency surgery or urgent procedure. The objective of this study is to evaluate the use of 4F-PCC at the study institution.

Methods: Prior to data collection, this study was approved by the Institutional Review Board. This is a retrospective chart review of adult patients who received 4F-PCC at the study institution between January 1, 2013 and June 30, 2016. Demographic information, including age, sex, and weight, as well as anticoagulant administration prior to 4F-PCC intervention and indication for chronic anticoagulation was collected. Indication and dose of 4F-PCC were evaluated as well as baseline and post-PCC INR. Other data points collected were administration of additional reversal agents, location of 4F-PCC administration, prevalence of thrombotic events, and in-hospital mortality. Prisoners and pregnant patients will not be included in this research. Data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-295

Poster Title: Trastuzumab loading, reloading, and monitoring evaluation in a regional community hospital

Primary Author: Jennifer Kwok, Owensboro Health Regional Hospital, KY; **Email:** jennifer.kwok@owensborohealth.org

Additional Author (s):
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Tracy Haley

Purpose: Trastuzumab is a human epidermal growth factor receptor 2 (HER-2) antagonist indicated for HER-2-overexpressing breast and metastatic gastric cancer. Dosing is once weekly or every three weeks, with a loading dose indicated on the first treatment day. Based on previous clinical studies, a repeat loading dose should be administered if a dose is missed by more than one week. Despite this recommendation, adherence varies in clinical practice. The objective of this study is to evaluate trastuzumab use practices at the study institution with a primary focus on loading and reloading doses.

Methods: Prior to data collection, this study was approved by the Institutional Review Board. Patients who received trastuzumab for breast or gastric cancer from May 1, 2012 to July 31, 2016 were included in this retrospective chart review. Study data was obtained using the institution's electronic medical record. Subjects were excluded if under 18 years of age, pregnant, or on a non-standard dosing regimen. The following key information on each subject was collected: patient demographics, dosing weight, type of cancer, goal of treatment, trastuzumab dosing and frequency, administrations of initial loading or subsequent loading doses, indications for dose delays, concurrent chemotherapy, ejection fraction (EF) and frequency of EF monitoring. Data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category:

Submission Type: Research-in-Progress

Session-Board Number: 9-296

Poster Title: Retrospective review of patients presenting to a rural community teaching hospital with intracerebral or gastrointestinal bleeding

Primary Author: Brook Walsh, Saint Claire Regional Medical Center, KY; **Email:** walshbrook@gmail.com

Additional Author (s):
Stephanie Baker Justice

Purpose: When patients present with major bleeds, the bleed may be secondary to anticoagulant therapy. In recent years, several anticoagulants with different mechanisms and their respective reversal agents have become available. The intention of having a reversal agent available for patients presenting with major bleeding and concomitant anticoagulant therapy is to decrease or stop that anticoagulant effect of medications thereby decreasing the amount of time for the cessation of blood loss and amount of blood ultimately lost. However, many of these products are not readily available at all institutions. The purpose of this retrospective review is to investigate the outcomes in patients presenting with a major bleed at a rural community hospital where many of the reversal agents are not readily available. In-hospital pharmacologic interventions for reversal are currently limited to the administration of the following: phytonadione and fresh frozen plasma.

Methods: A retrospective chart review of patients presenting with major bleeding events and who were on concomitant anticoagulant therapy between January 1, 2014 and December 31, 2015 will be performed. The electronic medical record will be evaluated for each presentation, diagnosis and subsequent treatment or management. Treatments utilized, relevant laboratory parameters and outcomes will be recorded.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-297

Poster Title: Evaluating Blood Glucose as an Indicator of Outcomes in Patients with Bacteremia

Primary Author: Kacie Migliavacca, Saint Joseph East, KY; **Email:** kaciemigliavacca@sjhlex.org

Additional Author (s):
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Greg Mateyoke

Purpose: Bacteremia is a significant cause of morbidity and mortality throughout the United States. A wide variety of risk factors for the development of bacteremia exist, including but not limited to diabetes mellitus. Studies have been done investigating the relationship between diabetic patients and their risk for developing bacteremia, as well as their outcomes based on their initial blood glucose control upon diagnosis. However, studies examining outcomes based on level of control while hospitalized for bacteremia are lacking. This project aims to determine whether well- versus poorly-controlled blood glucose during hospitalization for bacteremia is a factor in overall patient outcomes.

Methods: This research will be conducted as a single-center, retrospective, observational cohort study. The study will include diabetic patients admitted to the hospital from July 2012 to July 2016 with a diagnosis of bacteremia. The primary endpoint will be 30 day mortality. Secondary endpoints will include length of hospital stay, time from diagnosis to receipt of first antibiotic, appropriate definitive antibiotic use at time of identification of pathogen, and time to resolution of bacteremia from time of diagnosis. Data will be obtained utilizing electronic medical records. Data collected will include age, sex, weight/height, bacteria present in blood culture, mean and median daily blood glucose readings, A1c upon admission, antihyperglycemic medications received during hospital stay, length of hospital stay, time to resolution of bacteremia, time to de-escalation of antimicrobial therapy, length of antibiotic therapy, relevant comorbidities, and source of bacteremia (if known). Categorical data will be evaluated utilizing the chi-squared test (x2) and Fisher's exact test where appropriate. Continuous data will be evaluated utilizing the Student's t-test for parametric data and the Wilcoxon rank sum test for non-parametric data, where appropriate. An a priori alpha of 0.05 will be set for significance. Data analysis will be performed using Microsoft Excel and SAS statistical software.

Data will be recorded in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Results: The final results and conclusions of this study are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Conclusion: The final results and conclusions of this study are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-298

Poster Title: Vasopressor requirements in mechanically ventilated patients receiving dexmedetomidine versus propofol

Primary Author: Breanne Martinez, Saint Joseph East, KY; **Email:** breannemartinez@sjhlex.org

Additional Author (s):
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Purpose: Propofol and dexmedetomidine are commonly used sedative agents in the intensive care unit (ICU), both of which have been known to cause hypotension. Given currently available literature, it is unknown if patients require increased vasopressor support or have variable requirements due to sedating medications. A comparison is needed to determine if there is a difference in vasopressor requirements in patients receiving propofol versus dexmedetomidine while intubated in an ICU.

Methods: This project will be conducted as a multi-center, retrospective, observational cohort study. The study will include patients admitted to the intensive care unit at Saint Joseph East and Saint Joseph Hospital between July 2014 and July 2016. The primary endpoint will be the incidence of vasopressor use in patients receiving propofol versus dexmedetomidine. Secondary endpoints include, length of time at goal mean arterial pressure (MAP), duration of vasopressor use, number of vasopressor agents required, maximum infusion rate of vasopressors overtime, percent change of MAP overtime, and ICU and in-hospital length of stay. Additional data to be collected include age, sex, APACHE II score, admitting diagnosis, and midazolam or fentanyl utilization. Data will be obtained utilizing physical and electronic health records. Categorical data will be evaluated utilizing the chi-squared test (X2) and Fisher's exact test where appropriate. Parametric continuous data will be evaluated utilizing the Student's t-test; non-parametric continuous data will be evaluated using the Wilcoxon rank sum test. An a priori alpha of 0.05 will be set for significance. Data analysis will be performed using Microsoft Excel and SAS statistical software.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-299

Poster Title: Rivaroxaban versus enoxaparin for the secondary prophylaxis of venous thromboembolic disorder in patients with active cancer

Primary Author: Carley DeVee, Saint Joseph East, KY; **Email:** carleydevee@sjhlex.org

Additional Author (s):
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Purpose: Due to the hypercoaguable nature of malignancy, venous thromboembolic disease (VTE) is a major source of morbidity and mortality. In fact several national guidelines, including the CHEST guidelines and the National Comprehensive Cancer Network both recommend secondary prophylaxis against VTE. They also recommend enoxaparin as the drug of choice for this indication over warfarin, and claim insufficient data to recommend the direct oral anticoagulant (DOAC) agents. Therefore, it is the aim of this study to compare the efficacy and safety of enoxaparin versus rivaroxaban for the secondary prevention of VTE in patients with active cancer.

Methods: This research is a multi-center, retrospective, observational cohort study. Inclusion criteria are patients with active cancer receiving care at Kentucky One Health ambulatory oncology clinics between July 6, 2013 and July 6, 2016. The first cohort will consist of patients receiving rivaroxaban for secondary VTE prophylaxis with active cancer. The second cohort will consist of patients receiving enoxaparin for secondary VTE prophylaxis with active cancer. The primary endpoint of this study is the incidence of VTE up to six months past initiation of anticoagulation for an acute VTE. Secondary endpoints include: major bleeding, mortality, and incidence of gastrointestinal bleed. Data will be collected utilizing a chart review process of all patients on enoxaparin or rivaroxaban in the Kentucky One ambulatory oncology system during the observation period. Data collected will include: gender, age, weight, serum creatinine, current smoking status, history of smoking, previous VTE type (DVT or PE), type of malignancy, history of GI bleed, other anticoagulation/antiplatelet therapy present, patient comorbidities, etc. Categorical data will be evaluated utilizing the chi-squared test and Fisher's exact test where appropriate. Parametric continuous data will be evaluated utilizing the Student's t-test;

non-parametric continuous data will be evaluated using the Wilcoxon rank sum test. An a priori alpha of 0.05 will be set for significance. Data analysis will be performed using Microsoft Excel and SAS statistical software.

Results: The final results and conclusions of this study are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Conclusion: The final results and conclusions of this study are pending and will be presented at the Great Lakes Pharmacy Residency Conference.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-300

Poster Title: Ceftriaxone versus levofloxacin for the empiric treatment of Escherichia coli urinary tract infections in the setting of high fluoroquinolone resistance

Primary Author: Samantha Wang, Saint Joseph Hospital, KY; **Email:** samanthawang@sjhlex.org

Additional Author (s):
Patrick Ratliff
Russ Judd

Purpose: Urinary tract infections (UTIs) are among the most common bacterial infections, most commonly caused by Escherichia coli. Per the Infectious Disease Society of America guidelines, options for the initial treatment of pyelonephritis requiring hospitalization include intravenous levofloxacin or extended-spectrum cephalosporins. Globally, uropathogenic E. coli resistance rates to fluoroquinolones have increased over 10-fold in the past twenty years. In 2015, 38% of uropathogenic E. coli at this institution were levofloxacin-resistant and 10% were ceftriaxone-resistant. The purpose of this study is to investigate the impact of high rates of fluoroquinolone resistance on clinical outcomes among patients receiving guideline-directed therapy for UTI treatment.

Methods: This is a retrospective, single center, cohort study of adults at a 433 bed community hospital had a urine culture positive for E. coli between January 1, 2012 and December 31, 2015 who received either intravenous (IV) levofloxacin or IV ceftriaxone for the empiric treatment of a UTI. Included patients will be divided into two groups based upon the first dose antibiotic. Exclusion criteria encompass patients with polymicrobial UTIs, patients who received both agents as empiric therapy prior to the availability of susceptibility results, concomitant infection that occurred outside of the urinary tract (unless E. coli was also identified in the blood and the bacteremia was thought to be secondary to the UTI), renal transplant recipients, and patients with suspected or confirmed prostatitis. The primary outcome is hospital length of stay. Baseline demographics, susceptibilities, time to appropriate antibiotic therapy, comorbidities, in-hospital mortality, ICU length of stay, 30-day readmission, total hospital cost, time to switch to PO agent, and susceptibility to empiric therapy will be collected through a review of electronic medical records. Continuous variables will be compared using a two-sample t-test or Mann-Whitney U test for normal and non-normal distributions, respectively. Categorical

variables will be compared using the Chi-squared or Fisher's exact test. P-values less than 0.05 will be considered statistically significant.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-301

Poster Title: Evaluation of proton pump inhibitor effect on tyrosine kinase inhibitor therapy in chronic myeloid leukemia patients

Primary Author: Nicole Edmonds, Saint Joseph Hospital, KY; **Email:** nedmonds16@gmail.com

Additional Author (s):
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Kimberly Flynn
Ryan Shely

Purpose: Tyrosine kinase inhibitors (TKIs) including imatinib, nilotinib, and dasatinib are considered first-line treatment options for Chronic Myeloid Leukemia (CML). Patients have been shown to achieve faster and more complete responses if treated with nilotinib or dasatinib. The absorption of these two agents is maximized in an acidic pH, and have been shown to yield lower serum concentrations when co-administered with Proton Pump Inhibitors (PPIs). However, the clinical implications of this interaction have not been studied. The purpose of this study is to determine if concomitant administration of PPI and TKI agents impacts clinical response rates in patients with CML.

Methods: This is a retrospective analysis of adult patients greater than 18 years of age who received imatinib, dasatinib, or nilotinib for CML while being seen at an outpatient oncology clinic of a 433-bed community hospital from July 2013 to July 2016. Included patients will be stratified based upon concomitant use of PPI and divided into two groups; those who received a PPI, and those who did not. Exclusion criteria include Philadelphia Chromosome negative CML; use of Ritonavir, Phenytoin, or Phenobarbital; and treatment with bosutinib, omacetaxine, or ponatinib. The primary outcome of the study is rate of major molecular response at 12 months. Baseline demographics, laboratory data, time from diagnosis to initiation of treatment, dose intensity, duration of treatment, rate of progression, and mortality will be collected through a review of electronic medical records. Patient identifiers will be removed from all data to protect confidentiality. Study outcomes will be compared with Independent samples t-test, Mann Whitney U, chi-squared, and Fisher's exact tests, depending on the type of data contained within each data set. Tests will be found to be significant with a p-value of less than 0.05.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-302

Poster Title: Impact of Pharmacist Attendance on Acute Code Stroke with Administration of Alteplase

Primary Author: Yuyun Rahmasari, Saint Joseph Hospital, KY; **Email:** yrahm2@gmail.com

Additional Author (s):
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Patrick Ratliff
James Ross

Purpose: Stroke is a leading cause of mortality and morbidity in the United States. Current stroke guidelines recommend the administration of intravenous alteplase within 4.5 hours of symptom onset in the setting of acute ischemic stroke. Timely treatment is essential to salvage the damaged tissue caused by loss of blood flow. In June 2014, the study facility implemented a code stroke team to assure rapid, consistent assessment and initiation of treatment for patients presenting with acute stroke symptoms. The purpose of this study is to evaluate if the participation of a pharmacist at code strokes expedites the process of alteplase administration.

Methods: This is a retrospective analysis of patients age 18 years and older who received intravenous alteplase for acute ischemic stroke between June 2014 to December 2016. Patients included in the study will be divided into two groups: group A includes patients receiving alteplase from 07:00 to 21:00 while a pharmacist attends code stroke, and group B includes patients receiving alteplase from 21:01 to 06:59 while a pharmacist is not available to attend code stroke. Exclusion criteria include patients who are pregnant or incarcerated. The primary endpoint of the study is time to bolus of intravenous alteplase from the time of order. Secondary endpoints include onset of stroke symptoms to alteplase bolus, time of code stroke call to initial alteplase bolus, correct alteplase dosing, deep venous thrombosis prophylaxis, bleed on computerized tomography scan, National Insititutes of Health Stroke Scale (at baseline, 12-h and 24-h post stroke), hospital length of stay and in-hospital mortality. All data and patient information, including demographic and clinical characteristics, will be collected through the review of electronic medical records. Continuous data will be analyzed using an independent samples t-test or Mann Whitney U as appropriate. Categorical endpoints will be

analyzed using a chi-square or Fischer's exact test as appropriate. All tests will show significance with a p-value of less than 0.05.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-303

Poster Title: Impact of real-time notification of Clostridium difficile rapid diagnostic test results and early initiation of effective antimicrobial therapy

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Additional Author (s):
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Shawn King
Russ Judd

Purpose: Clostridium difficile is an increasingly prominent nosocomial pathogen, and is the most common causative organism of healthcare associated diarrhea. While there is ample evidence to suggest that early initiation of effective antimicrobial therapy improves outcomes in patients with bacterial infections, no studies have investigated the impact of real-time notification of positive Clostridium difficile culture results with rapid pharmacologic intervention. The purpose of this study is to assess the impact of real-time notification of toxigenic Clostridium difficile detection of DNA amplification in patients with confirmed Clostridium difficile infection.

Methods: This is a retrospective review of Clostridium difficile infected patients in a community hospital. The study will have two cohorts: patients treated for Clostridium difficile infection (CDI) prior to implementation of the real-time notification system, and patients treated for CDI post implementation of the real-time notification system. The Antimicrobial Stewardship Program (ASP) will be contacted by the microbiology laboratory via a secure email listserv regarding positive toxigenic Clostridium difficile DNA amplification results. An alert was also created in an electronic surveillance system that notifies the ASP in real time when Clostridium difficile is identified in the laboratory. Once a positive CDI is detected, the ASP will proceed to ensure the initiation of antimicrobial therapy and implementation of contact precautions. Oral vancomycin or metronidazole will be considered effective for mild-to-moderate infections. Oral vancomycin, with or without metronidazole, will be considered effective for severe or severe, complicated infections. The primary outcome will be time to initiation of therapy. Secondary outcomes will include time to order entry of therapy, time to initiation of contact precautions, all-cause mortality, length of stay, length of stay in the ICU, length of stay from specimen

collection to discharge, 30-day readmission, and total hospital cost per case. Data will be recorded without patient identifiers and maintained confidentially. Appropriate statistical tests will be used with significance shown by a p-value less than 0.05.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Evaluative Study

Session-Board Number: 9-304

Poster Title: Heparin use in patients undergoing therapeutic hypothermia

Primary Author: Brandon Fugate, St. Elizabeth Healthcare, KY; **Email:** brandon.fugate@stelizabeth.com

Additional Author (s):
Jillian Arrasmith

Purpose: Therapeutic Hypothermia has shown to improve outcomes in cardiac arrest patients and is recommended for return of spontaneous circulation after an out of the hospital cardiac arrest. Hypothermia can have effects on metabolism and clearance of medications due to it slowing down temperature dependant enzymatic reactions. Heparin is one medication that may be affected by this decrease in metabolism. Current studies that evaluated the effect of hypothermia on aPTT levels showed that aPTT time was increased and that heparin may require dose adjustment in this patient population. This study aims to evaluate heparin dosing in patients under therapeutic hypothermia.

Methods: The institutional review board approved this multicenter retrospective study. During a 36-month period all patients admitted to St Elizabeth Healthcare, who underwent therapeutic hypothermia while also receiving continuous heparin infusions, were analyzed. Patients were excluded from the study if they did not have an Anti-Xa level drawn during hypothermia, patients younger than 18 years of age, hypercoagulable states such as cancer or antiphospholipid syndrome, or if patients did not reach goal temperature during hypothermia (Define goal temp). Data collected included initial heparin rate, initial Anti-Xa levels during hypothermia, and any documented major bleeding events. Gender, age, and weight were assessed as possible covariates. Patients' initial Anti-Xa values were evaluated as being sub-therapeutic, supra-therapeutic or in therapeutic range (0.3-0.7 IU/mL). The primary outcome in this study was to analyze the initial heparin rate (units/kg) and it's incidence of causing an elevated Anti-Xa levels among a patient population with acute coronary syndrome receiving both heparin and therapeutic hypothermia. Logistic regression was used to estimate the probability of elevated Anti-Xa level (defined by Anti-Xa > 0.70) during therapeutic hypothermia. A secondary outcome was to evaluate the incidence of bleeding in patients receiving the combination of heparin and therapeutic hypothermia.

Results: 55 patients were included in this study. The initial heparin rate (units/kg) was shown to significantly increase the risk of producing a supra-therapeutic Anti-Xa Value [P value: 0.006, Odds Ratio: 1.3972, Confidence Interval: (1.0584, 1.8445)]. 63.6% of patients had an initial supra-therapeutic Anti-Xa, with 69% having any supra-therapeutic Anti-Xa during hypothermia. The average heparin rate of all patients that had an initial Anti-Xa in therapeutic range was 11.2 units/kg/hr. The average heparin rate of all patients that had an initial Anti-Xa above range was 13.1 units/kg/hr. Pharmacists were able to adjust the heparin rate during therapy. The average heparin rate of all patients at the conclusion of hypothermia was 10.0 units/kg/hr. None of the potential covariates were statistically significant (p-values 0.363, 0.511, and 0.322 respectively). No bleeding events were documented.

Conclusion: Using the current heparin dosing protocol of St. Elizabeth Healthcare, in this patient population, leads to increased incidence of elevated Anti-Xa levels. Despite these supra-therapeutic levels, no major bleeding events were documented. However, dosing adjustments still should be made for these patients in order to minimize risk. This acutely ill patient population presents unique pharmacokinetic circumstances that may warrant future research to determine additional medication dosing adjustments.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-305

Poster Title: Retrospective evaluation of continuous renal replacement premixed solution utilization and associated electrolyte replacement

Primary Author: Megan Heath, St. Elizabeth Healthcare, KY; **Email:** megan.heath@stelizabeth.com

Additional Author (s):
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Purpose: Continuous renal replacement therapy (CRRT), a method of extracorporeal blood purification, is often used in hemodynamically unstable patients with acute kidney injury. CRRT removes electrolytes from the blood; subsequently, patients often require electrolyte replacement. Dialysate and replacement fluids are electrolyte solutions used in CRRT that can have a further impact on patients' electrolyte levels. The purpose of this study is to evaluate the use of standard CRRT solutions at St. Elizabeth Healthcare and measure potential effects on electrolyte replacement requirements. Furthermore, this study aims to determine whether solutions containing a different composition and/or concentration of electrolytes would benefit patients.

Methods: The institutional review board approved this retrospective study. The electronic medical record system will be used to identify all patients receiving CRRT at St. Elizabeth Healthcare Edgewood, Florence and Fort Thomas over the span of one year. Patients at least 18 years old receiving CRRT for at least 24 hours will be included in the study. Exclusion criteria include patients receiving custom dialysate or replacement fluid or patients on CRRT for less than 70 percent of every 24 hour period. Additionally, any CRRT cycle, defined as a period where dialysate and replacement fluid rate and composition did not change, lasting less than 12 hours was excluded. The following data will be collected: demographics (including age, sex, and BMI), duration of CRRT, use of citrate anticoagulation, type of dialysate and replacement fluid, custom electrolyte additives, dialysate and replacement fluid rates, daily potassium, calcium, magnesium, and phosphate replacement required, and 30 day mortality. Data collection is currently ongoing.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-306

Poster Title: Evaluation of intravenous (IV) to oral (PO) conversion of medications: a look at opportunity, compliance, cost, and possible expansion of the current procedure.

Primary Author: Katelyn Gaines, St. Elizabeth Healthcare, KY; **Email:** katelyn.gaines@stelizabeth.com

Additional Author (s):
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Purpose: With the recent implementation of the Affordable Care Act, health care systems across the United States are searching for ways to reduce costs as well as improve quality of care for patients. Studies have shown that converting from intravenous to oral therapy as soon as patients are clinically stable can reduce the length of hospitalization and lower associated healthcare costs. This study will evaluate the current protocol at St. Elizabeth Healthcare Edgewood, Florence and Fort Thomas and the effectiveness of that policy in cost savings.

Methods: The Institutional Review Board approved this retrospective chart review. The electronic medical records will be reviewed for patients admitted to the hospital from June 1st, 2015 to May 31st, 2016 who received one of eight medications on the current intravenous to oral conversion protocol: fluconazole, azithromycin, ciprofloxacin, levofloxacin, linezolid, metronidazole, famotidine, or pantoprazole. The following data will be collected on 600 randomized patients: demographics (age, sex, height, weight), hospital site location, identified intravenous to oral medication, eligibility for intervention, date eligible for intervention, physician intravenous to oral conversion, pharmacist intravenous to oral conversion, date of pharmacist intervention, if applicable the difference between date of eligibility and date of pharmacist intervention, cost savings associated with pharmacist intervention and cost savings associated with missed interventions.

Results: In Progress

Conclusion: In Progress

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-307

Poster Title: Clinical outcomes for Clostridium difficile–associated diarrhea: fidaxomicin, metronidazole and vancomycin

Primary Author: Jordan Adkins, St. Elizabeth Healthcare, KY; **Email:** j-adkins.1@onu.edu

Additional Author (s):
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Purpose: The Infectious Disease Society of America Clostridium difficile guidelines currently only recommend usage of oral vancomycin, along with intravenous and oral metronidazole. Since the advent of these guidelines, fidaxomicin was Food and Drug Administration approved for treatment of Clostridium difficile. Fidaxomicin is non-formulary in many hospitals due to exorbitant costs in comparison to conventional therapy. The objective of this study is to determine the clinical success rates of fidaxomicin in a community hospital system, compared to current standards of therapy for treatment of moderate to severe and recurrent Clostridium difficile-associated diarrhea.

Methods: The Institutional Review Board approved this retrospective chart review evaluating patients from January 2013 to December 2015, by utilizing the EPIC electronic medical record. Patients included in this study are 18 years or older, prescribed fidaxomicin, oral vancomycin, metronidazole, or a combination of these agents. Patients also have a diagnosis of Clostridium difficile confirmed by clinical signs and symptoms, along with positive polymerase chain reaction (PCR) or endoscopically observed pseudomembranous colitis. Data collection points include: gender, age, body mass index, new or recurrent C. difficile episode, PCR results for admission, concomitant systemic antibiotics used, number of concomitant systemic antibiotics, C. difficile treatment group (fidaxomicin, fidaxomicin and intravenous or oral [IV/PO] metronidazole, fidaxomicin and oral vancomycin, Fidaxomicin with oral vancomycin and IV/PO metronidazole, oral vancomycin, oral vancomycin and IV/PO metronidazole), duration of treatment, length of stay, proton pump inhibitor use 90 days prior to admission or during admission, and readmissions within 30, 60, and 90 days. Due to significantly fewer patients receiving fidaxomicin, treatment groups are to be randomized to equal sized groups of patients,

based on fidaxomicin groupings. Data will be analyzed for average rates of readmission for all treatment groups, with a focus on fidaxomicin groups versus non-fidaxomicin groups.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Evaluative Study

Session-Board Number: 9-308

Poster Title: Retrospective evaluation of pharmacy-led medication reconciliation and the impact on readmission and length of stay in high risk patients

Primary Author: Taylor Hanahan, St. Elizabeth Healthcare, KY; **Email:** taylor.hanahan@stelizabeth.com

Additional Author (s):
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Purpose: Literature has shown that pharmacists can have an impact on patient care by reducing medication discrepancies and reducing length of stay or readmissions. An interdisciplinary pilot program was initiated to reduce readmissions. Pharmacists performed admission medication reconciliation for patients deemed high-risk of readmission. The primary outcomes of this study are to determine the number of variances found by pharmacists on admission medication reconciliation and to determine the impact on length of stay and readmission rates within 30 days. The secondary outcome evaluated the impact of other services such as home health referral and free meals after discharge.

Methods: This retrospective chart review was approved by the Institutional Review Board. Patients were included into the intervention group of the study if they were >18 years or older, had a readmission risk score of greater than or equal to 15 according to the Mayo Readmission Risk Score Algorithm, length of stay of at least 48 hours, and medication reconciliation completed by a pharmacist within 24 hours of admission to a hospital unit. Patients were included into the control group if they were>18 years or older, had medication reconciliation performed according to the standard of care at the institution, and length of stay of at least 48 hours. Each group included equal numbers of patients with readmission risk scores. Data collected included baseline demographic information, readmission risk score, number of medications on admission, number of variances and types of variances found, length of stay, other services from care coordination, and readmission within 30 days. Statistical analysis was performed using ANOVA and logistic regression models for length of stay and readmission, respectively.

Results: There were 170 patients included in each group. The mean number of variances found in the pharmacist-led medication reconciliation group was 3.15. The average time spent per patient on medication reconciliation was 33.35 minutes. There were 256 failures to discontinue inactive medications. The length of stay in the intervention group was 5.06 days vs. 5.81 days in the control group. Patients who received admission medication reconciliation did not have a statistically significant reduction in length of stay (p=0.172). However, a 1.5 day reduction in length of stay is possible (CI -1.561, 0.281). Patients who received admission medication reconciliation had a statistically significant association with regard to readmission rates (p=0.004), but only when grouped together with other services. For the secondary outcome, there was a statistically significant association between medication reconciliation, age, and home health with regard to readmission within 30 days. Upon analysis of all 3 parameters combined, using logistic regression, patients with home health trended toward a higher rate of readmission, although not statistically significant.

Conclusion: Length of stay was shorter in patients with medication reconciliation performed by a pharmacist, however this was not statistically significant. Many variables have a significant impact on readmissions, such as age, medication reconciliation, and home health at discharge. This can be observed by the fact that medication reconciliation alone did not significantly impact 30-day readmission rates. The study is limited by the retrospective nature, as well as small sample size. In the future, a prospective study with a larger sample size, may be warranted in order to determine the impact that medication reconciliation has on length of stay and readmission in high-risk patients.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-309

Poster Title: Retrospective evaluation of hospital acquired pneumonia and healthcare associated pneumonia: An effort to minimize carbapenem use

Primary Author: Jennifer Copenhaver, St. Elizabeth Healthcare, KY; **Email:** jennifer.byerly@stelizabeth.com

Additional Author (s):
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Purpose: According to the 2016 Infectious Disease Society of America (IDSA) guidelines for hospital acquired pneumonia (HAP), carbapenems are acceptable first line agents for a duration of 7 to 14 days. Healthcare associated pneumonia (HCAP) was not included in the 2016 IDSA guidelines, however, there has been little change in antimicrobial prescribing practices for patients who would have met the definition of HCAP. The primary outcome of this study is to evaluate the duration and time to de-escalation based on culture and sensitivity results. The secondary outcome of this study is to assess the incidence of Clostridium difficile and Stenotrophomonas infections.

Methods: The Institutional Review Board approved this retrospective chart review. Electronic medical records will be used to identify patients greater than 18 years of age who: were admitted to one of the three St. Elizabeth Healthcare Hospitals between January 1, 2016 to June 30, 2016, met the criteria for HCAP or were diagnosed with HAP, and received meropenem therapy for greater than 48 hours. Patients will be excluded if they have: a history of co-infection with ESBL-producing bacteria, an infectious disease consult, have a chronic tracheostomy or known colonization in the respiratory tract. Data collection will include: baseline demographics, allergies, previous diagnosis of chronic obstructive pulmonary disease or interstitial lung disease, previous antibiotic use in the last 90 days, white blood cell count, temperature at admission, initial procalcitonin and lactic acid levels, level of care, total duration of meropenem therapy, concomitant antibiotic therapy, and culture reports.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-310

Poster Title: Evaluation of perioperative amiodarone dosing protocol on rates of post-surgical atrial fibrillation

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Raymond Holmes

Purpose: Despite the administration of perioperative beta-blockers and vitamin-C, both shown to decrease atrial fibrillation, postoperative atrial fibrillation persists as a common complication to cardiothoracic surgery which is correlated with an increased hospital length of stay and increased morbidity. The objective of this study is to evaluate the effect of a perioperative amiodarone dosing protocol on the rates of postoperative atrial fibrillation and adverse event profiles attributable to the administration of amiodarone.

Methods: The Lumedx reporting system will be used to identify patients that underwent CABG, aortic valve, or mitral valve surgeries prior to and following the implementation of a perioperative amiodarone dosing protocol. By reviewing the electronic health record, data will be collected including: patient demographics, serum creatinine, liver and thyroid function tests, incidence of atrial fibrillation, hospital morbidity/mortality, mean number of grafted vessels, estimated left atrial size, mean aortic cross-clamp time, use of intra-aortic balloon pump, requirement of postoperative pacing, duration of hospital and critical care unit stay, and total hospital cost. All patient data will be de-identified to maintain confidentiality throughout the study. Effective participation in protocol administration will be defined as greater than 60% compliance of doses given during the hospital stay. Rates for incidence of postoperative atrial fibrillation, pacing requirement, and duration of post surgical hospital stay will be compared between each group. Statistical significance will be evaluated based upon an $\alpha = 0.05$ using independent samples. Continuous data with be compared with student's t test or Mann-Whitney test. Categorical data will be compared with Chi Square or Fischer's exact test.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-311

Poster Title: Measuring students' knowledge, skills, and attitudes of the pharmacists' patient care process in an interprofessional setting

Primary Author: Emily Smith, Sullivan University College of Pharmacy and The Center for Health and Wellness, KY; **Email:** easmith@sullivan.edu

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Sarah Raake

Purpose: The purpose of this study is to examine Doctor of Pharmacy (PharmD) and Physician Assistant (PA) students' views on interprofessional learning with the goal to increase awareness of the roles of the different professions. Doctor of Pharmacy students will also be evaluated for their knowledge, skills, and attitudes of the Pharmacists' Patient Care Process (PPCP) with the goal of increasing awareness and performance of this process. The primary objective of this study is the change in perceptions of the Pharmacists' Patient Care Process from the PharmD students and the secondary objective is the change in perception of healthcare professions.

Methods: Students in the second year PharmD class at Sullivan University College of Pharmacy will participate in a sequential case based simulation with students in the first year class of the Master's in Physician Assistant program at Sullivan University. The Institutional Review Board application for this study has been submitted. The students will be placed together in teams and will collect information, assess, and create a plan for a simulated patient with diabetes. All students will be asked to complete a Readiness for Interprofessional Learning Scale (RIPLS), a validated survey tool, before and after each lab simulation session. PharmD students will also be asked to complete an additional survey that will assess their knowledge, skills, and attitudes in regards to the PPCP. It is anticipated 130 total students (90 PharmD and 40 PA) will participate in the surveys. At the end of each case based simulation, there will be a guided debriefing session to discuss thoughts, feedback, and items related to the patient case. After data is collected, it will be analyzed using a Mann-Whitney U Test.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-312

Poster Title: Implementation of a Pharmacist Run Non-Opioid Addiction Treatment Clinic in Collaboration with a Referring Practitioner

Primary Author: Emily Blaiklock, Sullivan University College of Pharmacy Center for Health and Wellness and St. Matthews Community Pharmacy, KY; **Email:** eblaiklock@sullivan.edu

Additional Author (s):
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Chris Harlow

Purpose: The opioid epidemic in the United States continues to be a pressing issue at the forefront of the medical community. With the limited number of medication-assisted treatment options and the low success rates with what is currently available, it has become evident that a new approach to opiate addiction treatment is needed. This research program will look at the benefits of implementing a pharmacist run Non-Opioid Addiction Treatment Clinic in collaboration with a referring physician.

Methods: Providers in both an inpatient and outpatient setting can refer patients to the Non-Opioid Addiction Treatment Clinic. Once the collaborative care agreement has been signed, the pharmacist will set up an appointment with the patient at the community pharmacy. Patients will be required to obtain a negative urine toxicology screen on the same day as the injection is administered. Once the appropriate lab work has been obtained the patient will be scheduled for a 1-hour appointment at the clinic. The collaborating pharmacist will provide patient education and an oral naltrexone challenge will be initiated. This confirms the patient does not have any opioids in their system as well as ensures they will not have an allergic reaction to the active ingredient prior to administering the injection. Once 30 minutes has elapsed and the patient has not become ill or had an allergic response, the pharmacist will begin counseling on the risks/benefits of the long-acting naltrexone injection. A communication card provided by the manufacturer will be provided to each patient at every appointment. The injection will be filled and administered by the pharmacist on a 28-day basis and follow-up calls will be made as needed. A goal of six months of treatment will be set for each patient based on clinical trial data and the clinic will track success rates with pharmacist involvement.

Results: In progress

Conclusion: In progress

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-313

Poster Title: Discharged on direct oral anticoagulants: assessing affordability and compliance

Primary Author: Cale Averill, Sullivan University College of Pharmacy/Frankfort Regional Medical Center, KY; **Email:** caverill@sullivan.edu

Additional Author (s):

Purpose: Direct oral anticoagulants (DOACs) appear to be a patient and prescriber friendly option when compared to warfarin due to the lack of required routine laboratory monitoring as well having standardized dosing regimens. Each of the DOACs have some form of copay savings program, such as a 30-day free trial and/or a discount off the patient's copay, which can make these agents even more appealing to patients and prescribers. The objective of this study is to determine whether patients who are prescribed these agents have difficulty paying for them and if affordability affects medication compliance after they are discharged.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients who are newly prescribed a DOAC. The following data will be collected via survey: patient age, gender, indication for DOAC therapy, type of insurance policy, patient's concern over medication costs, whether they have difficulty paying for medications, whether the patient has been noncompliant as a way to reduce medication costs, and if they have been given a coupon. An offer for a follow up call 6 weeks after discharge will be made, and if consent is obtained the patient's contact information will be collected. All data will be maintained confidentially, and all data will be de-identified once the follow up contact is made or refused.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-314

Poster Title: Patient-centered education: Traditional warfarin counseling vs. an experimental video series

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Additional Author (s):
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Amanda Jett
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Madison Vaughn

Purpose: Warfarin has been identified by the Institute of Safe Medication Practices (ISMP) as a high-alert medication. When used incorrectly, it can cause significant harm to the patient. An effective way to minimize the risk of harm and error is through patient education. Patient education on warfarin therapy has shown to improve anticoagulation control and reduce adverse events. The objective of this study is to compare the effectiveness of traditional face-to-face counseling to education via informational videos.

Methods: The Institutional Review Board has approved this non-blinded, randomized study, which will be conducted at an anticoagulation clinic within a community hospital. Men and women aged 18 or older who are new to warfarin therapy will be randomized to one of two groups. One group will receive traditional face-to-face warfarin counseling and the other group will be shown a short educational video series about warfarin. Traditional counseling and the video series will be conducted over four consecutive appointments. Both groups will receive education on warfarin therapy including, but not limited to, dosing, administration, and safety precautions. Two weeks after the 4th educational session, study participants will be given a warfarin assessment to evaluate warfarin knowledge and will be asked to complete a patient satisfaction survey. Other data to be collected includes sex, age, race, primary language, education level, warfarin indication, and expected treatment duration. Upon conclusion of the study, the reviewers will analyze the data to determine which group scored better on the warfarin assessment, thus providing means as to which educational method was more effective.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-315

Poster Title: A comparison of smoking cessation outcomes between The Cooper-Clayton Method to Stop Smoking and Freedom from Smoking in a community clinic setting.

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Additional Author (s):
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Purpose: Tobacco use is one of the leading causes of many serious health issues. Individuals who choose to stop smoking drastically reduce their risk for morbidity and mortality associated with tobacco use. Kentucky ranks second in the United States for tobacco use, justifying a great need for smoking cessation programs in the state. This study aims to compare the cessation rates between The Cooper-Clayton Method to Stop Smoking and the Freedom from Smoking programs in a pharmacist-run community clinic in Kentucky. While there is literature available on the programs individually, a study directly comparing the two has not previously been conducted.

Methods: This study will be conducted at The Center for Health and Wellness, a pharmacist-run ambulatory care clinic located at Sullivan University College of Pharmacy in Louisville, KY. This study has received approval from the Sullivan University Institutional Review Board. The Center for Health and Wellness previously offered The Cooper-Clayton Method to Stop Smoking, a 13-week program. This year, the clinic will adopt a new program, Freedom from Smoking, an 8-week program created by the American Lung Association. The programs will be compared based on cessation rates at 12 weeks from the quit date. Cessation rates will be stratified according to the Fagerstrom Nicotine Dependence Test, a validated method for assessing nicotine dependence. Non-pregnant participants 18 years of age or older who enrolled in the clinic's smoking cessation program and signed informed consent will be included. Data from The Cooper-Clayton Method to Stop Smoking program will be obtained retrospectively and data from the Freedom from Smoking program will be obtained prospectively. The data

collected will include demographic information, the score on the Fagerstrom Nicotine Dependence Test, and self-reporting of smoking cessation. Most of this information will be obtained via paper survey with one exception. For the Freedom from Smoking arm, the self-reporting of smoking cessation will be obtained via a phone survey.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-316

Poster Title: Measuring clinical and economic outcomes in a community pharmacy hypertension management program

Primary Author: Kimberly Cooper, Sullivan University College of Pharmacy/Walgreens, KY; **Email:** kcooper@sullivan.edu

Additional Author (s):
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Purpose: The objective of the study is to demonstrate the benefit of a community pharmacist-led hypertension management program and to evaluate the sustainability of such a program in a large chain drug store.

Methods: A prospective cohort study will be conducted at a Walgreens pharmacy in Jeffersonville, IN that is piloting a hypertension management program. Patients participating in the program will receive a free blood pressure monitor. Patients will be included in the trial if they are greater than 18 years of age who provide informed consent and self-report a diagnosis of hypertension who are not currently meeting their goal blood pressure. The primary outcome is change in blood pressure, pre- and post-management, with patients serving as their own control group. Secondary outcomes include improvement in medication adherence, proportion of patients achieving blood pressure goal, and proportion of patients receiving miscellaneous services such as immunizations. The study will be powered to detect a 13 mmHg difference in systolic blood pressure, based on prior trials describing the impact of independent community pharmacists on blood pressure. Utilizing 80% power and a 95% confidence interval, a sample size of 35 was calculated. With an estimated 20% drop out rate a minimum of 42 participants need to be enrolled. An expedited IRB has been approved for the study.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Evaluative Study

Session-Board Number: 9-317

Poster Title: Using pharmacist-driven recommendations to optimize management of staphylococcal bacteremia

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Purpose: The annual incidence of Staphylococcus aureus bacteremia (SAB) ranges from 4.7-38.2 per 100,000 person-years with a 30-day mortality rate of 20%. Source control, targeted antibiotic therapy, and appropriate duration of therapy are the tenets of management of SAB. This study aimed to increase appropriateness of treatment for SAB at an academic medical center.

Methods: A quasi-experimental design was used to analyze periods before and after implementation of a SAB treatment protocol. An institution-wide, multidisciplinary SAB treatment protocol was developed approval by the pharmacy & therapeutics committee. During the intervention period, an infectious diseases pharmacist left a structured medical note in the electronic medical record at day 2 and day 5 after positive S. aureus blood cultures. Patients with SAB treated before implementation of the protocol were compared to patients treated after protocol implementation for appropriateness of therapy. Appropriate therapy was defined as appropriate antistaphylococcal therapy and duration of therapy documented as 2 weeks for uncomplicated bacteremia or 4-6 weeks for complicated bacteremia. Appropriate antistaphylococcal therapy consisted of nafcillin or cefazolin for methicillin-susceptible S. aureus (MSSA) and vancomycin, daptomycin, and/or ceftaroline for methicillin-resistant S. aureus (MRSA).

Results: One hundred eighty-two patients were analyzed: 106 in the pre-implementation group and 76 in the post-implementation group. The median age was 50 years (IQR 35.5-63), 58% of the cohort was male, 26% of the cohort had a history of IV drug abuse. The most common

sources of infection were vascular access (23%), osteoarticular (20%), and respiratory tract (19%). The rate of MRSA in each group was 59%. In both groups, 63% of bacteremia cases were complicated. Seventy-two percent of patients in the pre group and 86% of patients in the post group were on appropriate therapy (P=0.03). In patients with MSSA, 73% of patients in the pre group and 81% of patients in the post group were treated with nafcillin or cefazolin. In patients with MRSA, 24% in the pre group and 49% in the post group were definitively treated with vancomycin. Median duration of therapy was 27 days in the pre group and 19 days in the post group (P=0.98). Mortality was significantly lower in patients who received appropriate therapy compared to patients who received inappropriate therapy (16% vs. 37%, P=0.008).

Conclusion: A pharmacist-driven, systematic approach to management of SAB significantly increased the number of patients on appropriate therapy. This was driven by increases in the number of patients receiving antibiotics for the appropriate duration of therapy and increases in timely collection of repeat blood cultures. Patients who receive appropriate therapy have significantly reduced mortality compared to patients who receive inappropriate therapy.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-318

Poster Title: Hemodynamic changes during procedural sedation with "ketofol" in the emergency department

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Purpose: The goal of procedural sedation in the emergency department (ED) is to provide safe and effective analgesia and sedation. Little information is available regarding the hemodynamic effects of ketamine plus propofol ("ketofol") as compared to alternative agents. Etomidate with or without fentanyl has shown to maintain hemodynamic stability during procedural sedation leading to patient and provider satisfaction. The objective of this study is to determine if "ketofol" has significant effects on hemodynamic stability while being used for procedural sedation in the ED compared to etomidate with or without fentanyl.

Methods: A retrospective, case-control study of patients undergoing procedural sedation in the ED will be conducted at University of Louisville Hospital. Patients over the age of 18 who received ketamine, propofol, or etomidate for procedural sedation from August 4, 2013 to August 4, 2016 will be screened for inclusion. The treatment group will include patients who received "ketofol" while the control group will be those who received etomidate with or without fentanyl. Patients undergoing procedural sedation by other means or who are allergic to any of the study medications will be excluded. The primary endpoint will be defined as a change in systolic blood pressure (classified based on a change of greater than 20%, a change between 20% and 50%, or a change greater than 50%). Secondary endpoints will include changes in heart rate, diastolic blood pressure, respiratory rate, oxygen saturation, and cumulative doses of sedative and analgesic agents. Chi-square tests and student's t tests will be used for data analysis.

Results: n/a

Conclusion: n/a

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-319

Poster Title: Diuretic prescribing, pharmacovigilance and correlation with adverse events in a geriatric primary care clinic

Primary Author: Emily Doss, University of Louisville Hospital, KY; **Email:** emidos@ulh.org

Additional Author (s):
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Purpose: Thiazides are currently recommended as an initial therapeutic option for the treatment of hypertension in patients age 60 and older by the Eighth Joint National Committee(JNC 8). Although recommended, this therapeutic class has potential adverse effects including electrolyte abnormalities, hypotension and increased serum glucose and uric acid levels. Appropriate monitoring of thiazides is paramount as the number of elderly patients continues to increase, and guidelines addressing monitoring of geriatric patients prescribed thiazide diuretics are limited. The objective of this study is to evaluate if appropriate monitoring practices for geriatric patients prescribed thiazide diuretic medications reduce rates of adverse drug effects.

Methods: This is an investigator-initiated, single-center retrospective study that will compare the adverse events found in geriatric patients receiving a thiazide who were appropriately monitored versus those who were not appropriately monitored. Patients seen at the Geriatric Clinic at University of Louisville Hospital age 65 years or older who were prescribed a thiazide diuretic from January to December 2015 will be screened for inclusion. Patients will be excluded if they carry a diagnosis of active cancer, end stage renal disease, or heart failure with reduced ejection fraction (defined as a documented echocardiogram showing ejection fraction < 40%).
The primary outcome of this study is to evaluate if appropriate monitoring practices for geriatric patients prescribed thiazide diuretic medications reduce rates of adverse drug effects. Secondary outcomes include the rate of development of individual adverse events including hypotension, new onset type 2 diabetes, new onset gout, electrolyte abnormalities and falls. This study aims to investigate if known adverse effects of thiazide diuretics can be avoided with

appropriate monitoring practices, or if thiazide diuretics have the potential to cause adverse effects in the elderly regardless of adequate monitoring by providers. This study has been submitted to the University of Louisville Institutional Review Board (IRB) for approval.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-320

Poster Title: Analysis of desmopressin administration in intracranial hemorrhage (ICH) for reversal of antiplatelet agents

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Additional Author (s):
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Purpose: ICH accounts for 15 percent of strokes annually and is related to a 6-month mortality of 30-50 percent. Patients taking anticoagulation or antiplatelet therapy at the time of ICH have a high likelihood of secondary hematoma expansion, which correlates with neurological deterioration and poor outcomes. Desmopressin administration has shown to increase Von Willebrand factor in patients with ICH, leading to shortened bleeding time, improved hemostasis and reduced postoperative blood loss. The purpose of this study will be to evaluate outcomes in patients with ICH receiving desmopressin for anti-platelet reversal.

Methods: A retrospective, case-control study of patients with ICH will be conducted at a university hospital designated as a level I trauma center. Data for the study population will be generated based upon International Classification of Diseases, tenth revision (ICD-10) diagnostic codes. The treatment group will include patients who present with ICH, have documented home use of aspirin or clopidogrel and received desmopressin for reversal. The control group will include the same presenting inclusion criteria, but will include patients who did not receive desmopressin as part of ICH treatment. Patients will be excluded if they are less than 18 years old, have documented home use of oral anticoagulation, diagnosis of a pre-existing blood disorder or documented end stage renal disease. The primary endpoint of the study will be survival to hospital discharge. Secondary endpoints will include hematoma growth, surgical intervention, and discharge status (defined as death, discharge to home, acute rehabilitation, or long term sub-acute rehabilitation). A subgroup analysis will be conducted assessing patient outcomes based on type of home antiplatelet therapy (aspirin vs. clopidogrel).

A chi-square test will be used to analyze the primary outcome as well as the subgroup analysis. Secondary endpoints will be descriptive in nature and will be analyzed using a student's t-test.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-321

Poster Title: Anticoagulation appropriateness in elderly patients with chronic atrial fibrillation

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Additional Author (s):
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Purpose: Increased age is a risk factor for stroke in patients with atrial fibrillation. Recent literature provides evidence suggesting patients with atrial fibrillation and one additional risk factor, excluding sex category, benefit from anticoagulation therapy. Literature also recognizes that a large number of elderly patients potentially receive inappropriate medications. Elderly patients on anticoagulation may be on concomitant medications that increase risk of bleed and are not therapeutically appropriate. The objective of this study is to assess the appropriateness of anticoagulation in elderly patients with chronic atrial fibrillation in the University of Louisville Physicians patient population.

Methods: This study has been submitted to the Institutional Review Board for approval. A data query of University of Louisville Physicians patients will be used to identify patients 65 years or older and have a diagnosis of chronic atrial fibrillation. Patients with a history of a myocardial infarction within the past year and/or an acute coronary syndrome within the past 3 months will be excluded. The information collected will include patient age, gender, estimated glomerular filtration rate, anticoagulant therapy, antiplatelet therapy, and nonsteroidal anti-inflammatory drug therapy. Appropriateness of anticoagulation therapy will be assessed using the Screening Tool of Older Persons' potentially inappropriate Prescriptions (STOPP) criteria and Screening Tool to Alert doctors to the Right Treatment (START) criteria. Appropriateness of renal dosing for direct oral anticoagulants will be based on the most recent laboratory estimated glomerular filtration rate and package insert recommendations. For chronic atrial fibrillation patients without anticoagulation or aspirin therapy, a review of the patient's chart will be conducted to identify any documented contraindications for anticoagulant use. Data will be collected by study staff and stored on a secured network database with password protection. Information will be coded in order to omit patient identifiers, with a separate file

linking patient identifiers to data. Both files will only be accessible by study staff and password protected.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-322

Poster Title: Pharmacy-led inpatient and discharge medication education and its impact on HCAHPS scores, medication adherence, medication errors, and 30-day hospital readmission rates

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Purpose: Despite the documented positive impact pharmacists have on medication adherence, medication error rates, patient satisfaction, and 30-day readmission rates, pharmacists provided discharge education in only 24 percent of hospitals surveyed in 2012. Furthermore, existing literature focuses on the benefits of pharmacy-led discharge education of high-risk patients versus all patients. Data on the benefits of pharmacy-led inpatient medication education is lacking. The objective of this study is to determine if routine pharmacy-led inpatient education and discharge education to all patients, regardless of their risk, improves patient outcomes and satisfaction.

Methods: This study will be submitted to the Institutional Review Board for approval. Informed consent will be required for enrollment. Patients will be included if they are 18 years or older, admitted or transferred to University of Louisville Hospital 6-South or 6-East unit, and discharged from University of Louisville Hospital 6-South or 6-East unit. Patients will be consented on the day of admission and randomized according to the date they were admitted. Patients admitted on an odd day of the month will be randomized to the intervention group and receive medication education at least every five days during admission and at discharge. Patients admitted on an even day of the month will be randomized to the control group and receive discharge medication education if the medical team has consulted pharmacy for medication education, if they are prescribed warfarin, or if they are newly diagnosed with congestive heart failure. The control group reflects the current clinical pharmacy services standard of care at University of Louisville Hospital. A phone survey will be conducted five to seven days post discharge. The primary outcome of the study is patient satisfaction, assessed by medication-related questions from the Hospital Consumer Assessment of Healthcare

Providers and Systems (HCAHPS) survey. Secondary outcomes include medication adherence, medication errors, and 30-day readmissions to the hospital.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-323

Poster Title: Current antiretroviral therapy prescribing practices in HIV-infected men versus women with drug resistance mutations

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Additional Author (s):
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Purpose: Human immunodeficiency virus (HIV) treatment guidelines are based on evidence from clinical trials enrolling 80 percent men. Existing literature suggests that sex-based differences in antiretroviral efficacy may exist, but trials lack appropriate power to demonstrate a statistically significant difference. A local pilot study suggests that regimens containing two active drugs may be as efficacious as a three drug regimen in women with the M184V mutation. The purpose of this study is to determine if gender differences impact the ability to attain viral suppression in patients with drug resistance mutations.

Methods: A retrospective electronic medical record review will be conducted on patients receiving treatment at the University of Louisville HIV Clinic from January 1, 2003 to July 30, 2016. This study focused on prescribing practices in HIV-infected men compared to women with one or more drug resistance mutation(s). Patients will be excluded for lack of a genotype result prior to initiating or changing antiretroviral therapy and inadequate documentation of viral load or CD4 counts prior to and/or following the initiation of new therapy. The most common drug resistance mutations will be identified and drug regimens will be evaluated for viral suppression success. To reduce the effect of confounding variables, male patients will be matched with female patients based on age, length of HIV diagnosis, baseline viral load and CD4 count at time of genotyping. Viral load will be transformed into a categorical variable for measuring virologic failure. Data will be analyzed using descriptive statistics, Chi-square tests, and logistic regression.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-324

Poster Title: Optimal maintenance immunosuppression in lung transplant recipients

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Purpose: The optimal maintenance immunosuppression regimen for lung transplant recipients has not yet been fully elucidated. Maintenance immunosuppression following lung transplant is largely based off of clinical experience and case reports that do not define a single ideal regimen. Questions remain regarding optimal immunosuppressive therapy, including the appropriate target calcineurin inhibitor serum concentration at various intervals following transplant. The purpose of this study is to evaluate the degree of immunosuppression in post-lung transplant recipients and the associated rates of biopsy proven acute rejection.

Methods: This retrospective, single-center study has been approved by the Institutional Review Board. Patients who received a lung transplant between January 1, 2011 and December 31, 2015 will be included. Patients who have undergone re-transplantation will be excluded. All patients will have received maintenance immunosuppression according to the institution's lung transplant protocol. Degree of immunosuppression will be determined based on serum tacrolimus trough levels. The protocol identifies a goal serum tacrolimus trough level of 10-12 mcg/L for the first three months post-transplant and 8-10 mcg/L thereafter. Patients will be evaluated for the initial 12 months post-transplant to assess the primary outcome of biopsy proven acute rejection rates via surveillance bronchoscopies. Each patient will serve as their own control when comparing the average trough levels over the first three months post-transplant to the average trough levels over the subsequent three to twelve months post-transplant on rates of biopsy proven acute rejection. A subgroup analysis will compare the implications of triple therapy immunosuppression with a calcineurin inhibitor, nucleotide blocking agent, and a corticosteroid versus dual therapy immunosuppression with only two of

the previously mentioned pharmacologic classes on the primary outcome. Secondary outcomes include rates of brionchiolitis obliterans syndrome, cytomegalovirus (CMV) infection, non-CMV infection, and mortality. Continuous and categorical variables will be analyzed for significance using Student's t tests and chi-square analyses respectively.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-325

Poster Title: Effect of post-bleed nonsteroidal anti-inflammatory drug use on intracranial hemorrhage progression

Primary Author: Jacob Rigdon, University of Louisville Hospital, Kentucky One Health, KY; **Email:** jacobri@ulh.org

Additional Author (s):
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Purpose: A common complication in the acute phase of intracranial hemorrhage is fever. The presence of fever in these patients is not benign. In subarachnoid hemorrhage patients, fever has been associated with increased mortality, disability, and cognitive impairment. Thus, fever is treated vigorously in intracranial hemorrhage patients, with the typical pharmacologic intervention being acetaminophen. Nonsteroidal anti-inflammatory drugs are not typically used for fever control in the intracranial hemorrhage population due to their antiplatelet effects via cyclooxygenase-1. The purpose of this study is to determine if nonsteroidal anti-inflammatory drug use in intracranial hemorrhage leads to an increase hematoma volume or significant re-bleeding.

Methods: This retrospective study evaluated adult patients with spontaneous intracranial hemorrhage as identified by a stroke database review. The patient population was obtained from a Level I trauma center between January 1st, 2013 to December 31st 2015. The primary outcome of this study was progression of intracranial hemorrhage on computerized tomography imaging 24 to 72 hours after nonsteroidal anti-inflammatory drug administration. Secondary outcomes included in-hospital mortality, intensive care unit length of stay, and hospital length of stay. Patient exposure to nonsteroidal anti-inflammatory drugs was categorized by drug, dose, and number of administrations. In order to determine progression of intracranial hemorrhage, neurosurgery practitioners assessed computerized tomography scans of included patients at baseline and 24 to 72 hours after nonsteroidal anti-inflammatory drug exposure. Amount of midline shift and hematoma volumes were assessed. Progression was

described as stable, clinically insignificant progression, or clinically significant progression. Patients were included if they were diagnosed with a non-traumatic intracranial hemorrhage within 48 hours of onset. Patients were excluded if they had a history of coagulation disorder, benign hematologic disorder, if they were initiated on warfarin or aspirin during their admission, or if they were initiated on a heparin drip with a partial prothrombin time greater than 60 seconds.

Results: Results are pending and will be presented at Midyear Clinical Meeting.

Conclusion: Conclusions are pending and will be presented at Midyear Clinical Meeting.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-326

Poster Title: Fingolimod Medication Utilization Evaluation: Experience of a Tertiary Care Hospital in Saudi Arabia

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Additional Author (s):
Sakra Balhareth

Purpose: Fingolimod (Gilenya®) is the first approved oral medication for relapsing forms of multiple sclerosis (MS). It reduces the incidence of clinical exacerbations and delay the accumulation of physical disability. Due to the safety concerns, complicated monitoring, and high cost of fingolimod; the formulary and therapeutics committee (FTC) at our tertiary care hospital decided to conduct a medication utilization evaluation (MUE). This MUE aims to evaluate the utilization of fingolimod with regards to the approved FTC indications and restrictions along with the adherence to the risk evaluation and mitigation strategy (REMS) program.

Methods: This is a retrospective chart review of patients who received fingolimod from January 2015 to March 2016. Data was collected from both electronic and paper chart. Total of 85 patients received fingolimod during the study period. Sixty patients were included based on the joint commission (TJC) recommendations for sample size calculation. Inclusion criteria was any patient who received one dose, or more, of fingolimod. Patients who received fingolimod outside of the study period were excluded.

Results: Majority of patients were females (n=49, 82%). Initial doses of fingolimod were prescribed by neurology consultants for all patients. Almost all patients started fingolimod for the proper indication (n=59, 98%), except one patient who was started for primary progressive MS. In regards to REMS program adherence; patient observation for 6-hours and ECG prior to the first dose were completed in 49 patients (82%). Two patients (5%) required monitoring overnight post initial 6-hours ECG due to new onset of 2nd degree AV block and prolonged QT; respectively. Fifty six patients (93%) gave history of chickenpox prior to initiation or had positive varicella zoster virus titer. All the reviewed patients underwent initial ophthalmologic

evaluation before starting fingolimod and regularly, every 3-4 months, regardless of the presence of uveitis or diabetes mellitus. None of the females in childbearing age became pregnant during the study period. Complete blood count and liver function tests were done in 48 (80%) patients prior to and every 3-6 months of fingolimod initiation. Eight patients (13%) discontinued fingolimod due to various reasons including; ineffectiveness, leukopenia, lymphopenia, elevated liver enzymes 5 times above normal level, or patients deciding to get pregnant.

Conclusion: In the past year the neurology department has developed a checklist and dedicated a coordinator for the sole purpose of optimizing adherence to the REMS program. Overall, the adherence to the REMS program and the restrictions at KFSH&RC is acceptable. The hospital continuously encourages diverse approaches to enhance patient care as well as improve the practice.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Evaluative Study

Session-Board Number: 9-327

Poster Title: Aspirin for long-term prevention of recurrent venous thromboembolism after unprovoked event: Is it effective in the Saudi population?

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Purpose: Venous thromboembolism (VTE) has high-risk of recurrence rate after anticoagulant therapy is discontinued. This risk is particularly high among patients with unprovoked VTE. Extended treatment with new oral anticoagulants and vitamin K antagonist reduced the risk, but they are associated with an increased risk of bleeding. Furthermore, there are limited studies suggesting that aspirin has a potential benefit in prevention of recurrent VTE after first unprovoked episode without significantly increasing the risk of bleeding. However, results are still controversial. We, therefore, sought to evaluate the benefit of aspirin use for preventing recurrent VTE in our patient population after unprovoked VTE.

Methods: We conducted a retrospective cohort study by using hospital computer systems and medical charts. Men and women aged 16 years and older were enrolled if they had had a first unprovoked VTE event during the period between 2010 and 2015, after completing their course of anticoagulant therapy, and were prescribed a daily dose of aspirin over 2 years. The primary outcome measure was to evaluate the recurrence of VTE in patients who received a daily dose aspirin over 2 years after completing anticoagulant therapy. The secondary outcome was to evaluate the safety outcome measures of long-term use of aspirin. These safety outcome measures comprise major bleeding (intracranial, intra-spinal, intraocular, retroperitoneal, intra-articular, pericardial or intramuscular with compartment syndrome), fall in hemoglobin level of 2 g per deciliter from the baseline, required transfusion of two or more units of whole blood or red cells, minor bleeding (any bleeding requiring a medical intervention and does not meet the definition of major bleeding), and requirement for upper or lower gastrointestinal endoscopy while on aspirin therapy.

Results: A total of 63 patients were included in our study. Fifty-five percent of them were female. Mean age of patients was 64 ± 18 years. Venous thromboembolism recurred in 6 patients (9.5%) who received aspirin over the two years. The types of recurrent VTE were deep vein thrombosis, pulmonary embolism and both in 4,1,1 patients, respectively. Minor bleeding in the form of gastrointestinal bleeding and bruises occurred in two patients. However, none of the patients had a major bleeding episode. Six patients out of 63 had a drop in hemoglobin level of 2 g/dl and more over the period of 2 years. However, only one of them required packed red blood cell transfusion as well as had abnormal upper gastrointestinal endoscopy. The overall upper GI endoscopy requirement was in 6 patients and only 4 of them had abnormal results. Lower GI endoscopy was requested for 2 patients and in both patients the results turned out to be normal.

Conclusion: Daily doses of aspirin in the Saudi patient population prevent the recurrent of VTE in ninety percent of patients with unprovoked venous thromboembolism who had completed anticoagulant treatment, with no apparent increase in the risk of neither minor nor major bleeding. However, a larger multicenter study is needed to confirm the finding of our study.

Submission Category: I.V. Therapy/ Infusion Devices/ Home Care

Submission Type: Evaluative Study

Session-Board Number: 9-328

Poster Title: Assessment of patient controlled analgesia versus intermittent opioid therapy to manage sickle cell disease vaso-occlusive crisis in dult Saudi patients

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Purpose: Vaso-occlusive crisis is one of the acute complications of sickle cell disease. The mainstays of treatment are hydration and pain control by analgesics. Adequate pain relief is not easily accomplished during episodes of vaso-occlusive crisis. Treatment varies according to pain severity, severe pain should be aggressively treated with opioids, which can be administered intravenously either by intermittent or continuous via patient controlled analgesia. The objectives of our study is to compare pain intensity between patient controlled analgesia and intermittent intravenous opioid therapy in addition to the prevalence of cardiovascular and respiratory adverse events in sickle cell vaso-occlusive crisis patients.

Methods: We conducted a retrospective study at King Abdul-Aziz Medical City Central Region, a tertiary care hospital which has bed capacity of more than 800 beds in Saudi Arabia. Approval from Institutional Review Board was obtained for this study. Patients admitted to emergency department secondary to vaso-occlusive crisis necessitating treatment with intravenous opioid either by intermittent infusion or continuously via patient controlled analgesia for at least 72 hours during the period of 2010 to 2014 were included in this study. A chart review was conducted to determine patients with vaso-occlusive crisis. Using the hospital electronic system the following data were collected: patient's age, gender, blood pressure, heart rate, respiratory rate, oxygen saturation and pain score on admission and daily for 3 days as well as the cumulative opioid analgesic dose for 72 hours which is reported as morphine equivalent. Average pain score, blood pressure, heart rate, respiratory rate were calculated. All data were recorded without patient identifiers and maintained confidentially. Pain intensity was evaluated by using numerical scale from 0-10, defined as follow: mild pain: if reported pain intensity between 1-2, moderate pain: if reported pain intensity between 3-6, severe pain: if reported

pain intensity between 7-10. An adverse reaction was defined as hypotension (systolic blood pressure less than 90 mm Hg), respiratory depression (respiratory rate less than 12 breaths per minute).

Results: We screened 117 patients during the period from January 2010 to December 2014. Of those, 99 (84.6%) met the study inclusion criteria and 18 patients (15.4%) were excluded. During the first 72 hours of admission, there was a significant reduction in pain score for patients in intermittent intravenous group in compared to those in patient controlled analgesia group ($P < 0.05$) where the mean pain score were 3 and 5, respectively. The total amount of morphine administered over 72 hours of admission was significantly ($P < 0.05$) higher in patient controlled analgesia group (777 ± 175 mg) in compared to the intermittent intravenous group (149 ± 74mg). Clinically significant hypotension or respiratory depression was not observed in both groups over the 72 hours of admission.

Conclusion: Our data indicate that during the first 72 hours of admission, intermittent intravenous morphine was more effective than patient controlled analgesia infusion in term of pain control. In addition, the total amount of morphine administered over 72 hours of admission was higher in patient controlled analgesia group in compared to the intermittent intravenous group.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Evaluative Study

Session-Board Number: 9-329

Poster Title: Digoxin use and outcomes among patients with atrial fibrillation

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Purpose: Digoxin is a cardiac glycoside used for rate-control in patients with atrial fibrillation which is a major cause of morbidity and mortality. Although it has a narrow therapeutic window and can easily reach toxic serum level, it is one of the most frequently prescribed drugs and therefore intoxication could be overlooked. The purpose of this study is to evaluate safety outcomes of digoxin use, monitoring, hospital admissions and emergency visits, and the number of reported toxicities.

Methods: The institutional review board (IRB) approved this retrospective electronic chart review study on February 2016. Patients' data were collected over a period of one year from November 2014 to October 2015. The study included male and female aged above 18 years old with a confirmed diagnosis of atrial fibrillation and on digoxin treatment for a minimum of 6 months. Oncology patients were excluded. Data collected included demographics, co-morbidities, laboratory values of renal function and serum electrolytes, digoxin regimen, digoxin serum level, the number of digoxin level tested per year, concomitant medications and possible drug interactions. The primary outcome measures were to assess the number of hospital and emergency admissions, and evaluate digoxin monitoring plan. The secondary outcome measures were the average digoxin dose, percentage of patients on beta-blocker and calcium channel blocker treatment, and the signs and symptoms associated with digoxin toxicity. The results were analyzed using SPSS software version 22. The categorical variables were presented as mean and standard deviation, and the continuous variables were presented as n (%).

Results: The study included 184 patients with atrial fibrillation out of 250 patients on digoxin, of whom 58.7% were females. Demographics showed an average age of 67 ±13 years, and comorbidities including heart failure (63%), hypertension (79.3%), diabetes (69%), hyperthyroidism (1.1%), hypothyroidism (19%), chronic obstructive pulmonary disease (19%) and chronic kidney disease (23.4%). Patients were found to have an average number of one hospital admission and two emergency visits per year. The average digoxin dose was 0.125 mg for all patients, and digoxin level was tested at least once in 27.2% of the patients. The average levels of potassium were 4.3 ±0.4 micromol/L, and 0.77 ±0.3 micromol/L for magnesium. The renal function tests were done for 95% of the patients. Potassium and magnesium electrolytes were tested in 95% and 43% of patients, respectively. Thirty-six patients (34.8%) were on calcium channel blocker and beta-blocker with digoxin, and twenty-eight (15.2%) were on digoxin alone. Digoxin toxicity with a level of 2.3 micromol/L was reported in one patient and manifested as repeated vomiting and bradycardia of 50 beats per minute.

Conclusion: Findings showed that seventy-two percent of patients had no digoxin level tested, and one digoxin toxicity-related emergency visit per year. The study results reinforce the need to develop an institutional-based practice guideline about digoxin safe use and monitoring in atrial fibrillation patients.

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 9-330

Poster Title: Impact of implementing a pharmacy resident-centered medication reconciliation program on medication errors in cardiac surgery units

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Purpose: When medication reconciliation was performed by pharmacists; frequency and severity of medication errors were significantly reduced. Shortage in the qualified manpower is always challenging. Several studies were conducted to solve this issue utilizing several pharmacy resources, such as pharmacy students and technicians, for medication reconciliation. However, none of those studies tested the utilization of pharmacy residents for this purpose. Utilizing pharmacy residents for medication reconciliation may lead to an optimum utilization of pharmacy resources and positively impact patient care. The purpose of this study is to assess the impact of implementing a pharmacy resident-centered medication reconciliation program on medication errors.

Methods: This is a single arm prospective study that was conducted in an academic tertiary care center and approved by the institutional review board. Patients were eligible to be included in the study if they were admitted, transferred and/or discharged under cardiac surgery team care from September, 2015 to March, 2016. Cardiac Surgery Intensive Care Unit (CSICU) in this center is a fast paced unit, with a 23-bed capacity, divided between adult and pediatric units,with an average of 1,000 surgical cases performed per year. Once the patient is stable, he/she will be transferred to the Cardiovascularstep-down unit (CVSD) or to the Cardiovascular Telemetry unit (CVT). The primary outcome was to assess the number and rate of unintentional medication discrepancies in this setting. Secondary outcomes included the number of interventions done by the pharmacy resident in order to resolve discrepancies and their clinical significance, percentage of acceptance, rate of interventions per patient,

medication regimen complexity index (MRCI) and its correlation with medication discrepancies. The study was designed to include 1,000 patient encounters(i.e. admissions, transfers and discharges) which were sufficient to estimate the true unintentional discrepancy rate with 4.5 percentage points. Descriptive statistics were used to summarize data.Correlation was calculated using the nonparametric Spearman's correlation coefficient and all statistical analyses were done using the SAS® software package, version 9.4 (The SAS Institute Inc., Cary, NC, USA).

Results: A total of 374 patients were included and 1,000 encounters have been tracked. The one thousand encounters were distributed as follows; 374 (37.4 percent) admissions, 308 (30.8 percent) transfers and 318 (31.8 percent) discharges. Four-hundred and seventy of the included encounters were for adult patients(47 percent).A total of 260 medication discrepancies have been detected; the majority were detected during admission 181 (69.61 percent), followed by transfer 49 (18.84 percent) and discharge 30 (11.53 percent). Discrepancy rates among all of the study patients were of 0.48, 0.15 and 0.09 and 0.913, 0.307 and 0.176 among adult patients upon admission, transfer and discharge, respectively.The majority of these discrepancies resulted from the omission of home medications (207; 79.61 percent). Out of the 260 interventions recommended by pharmacy residents, 200 (76.92 percent) were accepted, as is, by the medical team, and the remaining were accepted with modifications. One-hundred and sixty six of the accepted interventions were of a high clinical significance (83 percent). There was a persistent significant correlation between the number of medication discrepancies and the MRCI upon admission (p-value < 0.0001; r= 0.34), transfer (p-value= 0.0003; r= 0.21) and discharge (p-value= 0.0672; r= 0.1).

Conclusion: Implementation of a pharmacy resident-centered medication reconciliation program can be a powerful approach for identifying medication errors in cardiac surgery patients at admission and throughout the transition of care

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 9-331

Poster Title: Efficacy and Safety of Valganciclovir Dosing in Pediatrics Post Hematopoietic Stem Cell Transplant (HSCT)

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Purpose: Cytomegalovirus (CMV) is an infectious complication post-transplant that is associated with high rates of mortality. Valganciclovir (VGVC) is approved for the prevention of CMV in pediatrics in kidney/heart transplant. Two approaches are used to prevent CMV post-transplant; prophylaxis or pre-emptive therapy. A study comparing between them showed no statistically significant difference in CMV disease. Due to the lack of recommendations in pediatrics post-HSCT, clinicians are utilizing doses that are either derived from adults' post-HSCT or pediatrics post solid organ transplant. This study assesses the efficacy of valganciclovir in preventing CMV re-activation in pediatrics post-HSCT when dosed on this equation(900mg/m2/day)

Methods: All pediatric patients who underwent hematopoietic stem cell transplant (HSCT) at a tertiary hospital in Saudi Arabia between January 2009 and December 2015 and patients who received valganciclovir (VGVC) as pre-emptive therapy were identified. Data were collected through chart review of patients' medical record and integrated clinical information system.
Inclusion Criteria
1. Pediatric patients (Age 0–14 years) who underwent HSCT between 2009–2015
2. Received VGVC as pre-emptive therapy post-HSCT
Exclusion Criteria
1. Pediatrics patients who can't take oral medication
Study Outcomes
Primary:
To study the efficacy of VGVC dose in the prevention of CMV reactivation in pediatrics who underwent HSCT using the following equation (900 mg/m2/day) Re-activation was defined as

positive DNAemia ≥ 1000 copies/ml for high risk patients and DNAemia ≥ 5000 copies/ml for low risk patients
Secondary:
To evaluate the hematological toxicities (i.e.neutropenia, leukopenia, thrombocytopenia) of VGVC in pediatrics who underwent HSCT using the pre-specified equation
Statistical Analysis
Descriptive statistics for the continuous variables were reported as mean±standard deviation and categorical variables were summarized as frequencies and percentages. All continuous variables were compared by Student's t-test, while categorical variables were compared by Chi-square test. Univariate and multivariate logistic regression were used to study the effect of different risk factors on the outcomes of this study. A P value of < 0.05 was considered statistically significant. Analysis was performed with Statistical Analysis System (SAS)

Results: A total of 979 HSCT have been performed on pediatrics between 2009 – 2015 at a tertiary hospital in Saudi Arabia. One hundred and forty three patients met our inclusion criteria and were included in the analysis. The majority of patients were high risk (98%). One hundred and twenty five patients were seropositive (87%) and 18 patients were recipients of seropositive grafts (13%). None of those patients experienced CMV re-activation while on therapy. Adverse events in the form of hematological toxicities were reported as follow leukopenia, anemia and thrombocytopenia (22%, 80% and 23%, respectively).

Conclusion: Based on our preliminary findings, we concluded that; the use of valganciclovir when dosed based on this equation (900 mg/m2/day) was effective in the prevention of CMV re-activation in pediatrics post-HSCT. Correlation analysis will be performed to identify the impact of hematological toxicities on the study outcomes.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Evaluative Study

Session-Board Number: 9-332

Poster Title: Tacrolimus induced neurotoxicity in early post liver transplant saudi patients: incidence and risk factors

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Purpose: Tacrolimus is a calcineurin inhibitor (CNI) that is commonly used as an immunosuppressant to prevent rejection of organ transplants. It may cause early neurological complication after liver transplantation known as early calcineurin inhibitor-induced neurotoxicity (ECIIN). The incidence and risk factor of ECIIN has not been reported in Saudi population. We investigated the incidence, risk factors, and clinical outcomes of ECIIN after liver transplant. We also looked at the length of stay in intensive care unit, hospital, and 30 day mortality as secondary endpoints.

Methods: This is a retrospective, cohort study of adult patients on tacrolimus with mild, moderate or severe neurological events within the first month after liver transplantation at a single center of patients who meet inclusion criteria between 2004 and 2014. A total of 338 patients were included in the analysis and the sample size was calculated based on a pilot study.

Results: Among 338 patients of liver transplantation, 63 patients (19 percent) developed ECIIN. Forty eight percent of patients had seizures, 15 percent had agitation, 13 percent psychosis, 10 percent severe tremors, 14 percent had confusion, and 6 percent developed coma. The average time of incident to develop ECIIN was 11 + 8 (mean + SD) days post-transplant. Thirty eight patients were managed by switching to cyclosporine, 12 required a reduction in the dose, and 3 were managed temporarily by discontinuing therapy. Average length of ICU stay was 4 + 18 days, hospital length of stay was 19 + 38 days, and total of 9 patients died within 30 days post-transplant.

Conclusion: The rate and risk factors of ECIIN occurrence at our center is similar to that reported in other population reported in the literature.

Submission Category: Critical Care

Submission Type: Evaluative Study

Session-Board Number: 9-333

Poster Title: Midodrine for vasoplegia after critical illness

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Purpose: Vasoplegia is the final common pathway of prolonged and severe circulatory shock for which patients require low doses of intravenous vasopressors to maintain their blood pressure. Midodrine, an oral peripheral α1-agonist was approved for the management of symptomatic orthostatic hypotension but has been used off-label in the management of vasoplegic patients in the ICU. Although the data is scarce for midodrine use in this setting, the possibility of a clinically significant vasopressor effect has prompted intensivist to prescribe it. Therefore, this study was designed to establish the efficacy and safety of oral midodrine in weaning off patients from intravenous vasopressors.

Methods: This retrospective observational study was conducted at a tertiary hospital to evaluate the vasopressor effect of oral midodrine in patients who were not able to be weaned off IV vasopressors. Data were collected from adult medical and surgical ICU patients during 5 years period from 2011- 2015.
Patients were included if they required minimum dose of intravenous vasopressor and were attempted to be weaned off with introduction of midodrine. Patients were excluded if they were hemodynamically unstable, had documented adrenal insufficiency, on benzodiazepines, or received vasodilator in the preceding 24 hour.
Patient demographics, severity of illness scores including Acute Physiology and Chronic Health Evaluation II, admitting diagnosis, daily hemodynamic were collected. Types and doses of IV vasopressor, total daily dose of midodrine and variables related to other reasons for hemodynamic instability.
The primary end point was the complete wean off IV vasopressor within 72hr of midodrine start. Secondary end points were percent of IV vasopressor dose reduction in patient where

complete wean off was not observed, adverse effects specified as uncontrolled hypertension or cardiac ischemia, and the time to restart of IV vasopressor.
Data analysis was presented in mean ± SD in case of continues variables or in case of skewed data as medians with interquartile ranges. Fisher's Exact test was used for categorical covariates and Mann-Whitney for continuous covariates.

Results: Out of 200 encounters screened, 68 met the inclusion criteria. The majority of patients were male and the mean age of subjects were 66 ± 14 years. The majority of patients received norepinephrine (87 percent) followed by dopamine (10 percent).
During the study period (i.e. within 72hr of midodrine start), 46 patients (68 percent) were completely weaned off IV vasopressors where 22 patients (32 percent) either partially weaned off or no dose reduction was observed. Among patients who were not weaned off IV vasopressor, 10 patients (45 percent) of them had dose reduction without complete wean off IV vasopressor and the median dose reduction was 50 percent ranging from 13 percent to 87 percent. Among those who were completely weaned off IV vasopressor, 24 out of 46 patients (52 percent) had IV vasopressor resumed within 72 hours with mean time to restart IV vasopressor of 20 ± 15 hours. Adverse drug reaction occurred in 2 out of 68 patient (3 percent) presented as uncontrolled hypertension.

Conclusion: Our findings showed that oral midodrine appears to have a clinically significant vasopressor effect on some patients when added to persistently vasoplegic patients in the ICU. However this effect appears not to be sustained with a large percentage requiring resumption of IV vasopressors.

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-334

Poster Title: Bridging the gap between theory and practice; the active role of inpatient pharmacists in therapeutic drug monitoring

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Purpose: Therapeutic drug monitoring (TDM) is a fundamental responsibility of all pharmacists to provide optimized therapeutic outcomes for patients. It leads to a reduced incidence of adverse effects, a reduction in mortality, and cost-savings. However many hospitals have faced barriers in implementation including pharmacists spending most of their time on dispensing and dealing with inventory issues, lack of practical knowledge and pharmacokinetic expertise. Therefore, this project aims to evaluate the impact of a pharmacist-led TDM service to improve therapeutic drug monitoring of vancomycin and aminoglycosides with the goal of optimizing patient care at a tertiary care hospital.

Methods: The institutional review board approved this pre-post study. The pre-phase consists of a report of all patients that have been administered vancomycin, gentamicin and amikacin for 3 months. Orders will be evaluated for correct dosing and ordered levels. A team of pharmacists will then be trained by several educational methods including interactive lectures, flowcharts and checklists. These sessions will be followed by assessment questions. The post-phase will consist of pharmacists reviewing a daily report of the 3 antibiotics on a 24-hour 7 days basis and provide recommendations to either the clinical pharmacist or physician regarding the following parameters: Initial dose, dose adjustment, and laboratory drug level requests. The primary outcome is to assess the proportion of correct initial doses of prescribing orders for vancomycin, gentamicin and amikacin as per hospital approved guidelines. Secondary outcomes include proportions of correct dose adjustment orders and correct orders

for drug sampling time. It was determined that 75 patients per treatment group would yield a 90% power to detect a difference of 25% between different phases for the primary outcome.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Descriptive Report

Session-Board Number: 9-335

Poster Title: Analysis of oral therapies used in non-pancreatic neuroendocrine tumor at a tertiary university hospital and their safety

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Purpose: Neuroendocrine tumors (NETs) are a heterogeneous group of tumors of various locations that are treated with different chemotherapy protocols and targeted therapies. In the last years, the evidence on the use of oral therapies for its treatment has multiplied, mostly for pancreatic NET and, to a lesser extent, gastrointestinal or lung origin NETs, but they are still not approved for all kinds of NETs. The aim of this review is to analyze how non-pancreatic NETs are treated at our center and the safety of the therapies that are nowadays being used.

Methods: We analyzed all the patients with non-pancreatic advanced progressive NET that have been treated at our hospital with oral therapies. We recorded the age of the patients, their NET localization, what drug they were treated with and for how long they were on that treatment. We analyzed the treatment sequence with those drugs and whether they were being concomitantly treated with somatostatin analogs. In what refers to safety, we reviewed if a dose reduction of the treatment had occurred during each treatment due to toxicity. Finally, the date of death and data on overall survival of the registered patients was collected, when applicable.

Results: 10 patients received 17 different oral treatments. Their average age at the beginning of the first treatment was 60 [19-81]. Three patients had pulmonary, four intestinal, one thymic and one ovarian NET and one MEN (thymic and pancreatic). All of them were on treatment with somatostatin analogs. Five patients were treated with sunitinib on first line, three of whom received a second line with everolimus and two of them a third line with capecitabine and temozolomide. The other five patients received everolimus as first line and one of them was

subsequently treated with sunitinib. The mean duration of treatment with everolimus was 440 days[182-699], 325 days[155-464] with sunitinib and 400 days[338-462] with capecitabine and temozolomide. Dose reductions occurred in four out of eight patients on everolimus due to stomatitis, diarrhea, asthenia, infections and cytopenias. In the case of sunitinib, dose reductions occurred in four patients out of six due to nausea, diarrhea, stomatitis, drug intolerance. In the case of capecitabine and temozolomide, one out of two had it reduced due to hand-foot syndrome. Out of the five patients that are deceased at the moment of analysis, the mean overall survival since the first line of treatment was 26 months [6.4-56.1].

Conclusion: Our safety findings were consistent with the known side effects of everolimus, sunitinib and capecitabine. The mean duration of treatment with everolimus was longer than previously reported in the RADIANT-4 study. The overall survival of our series is similar to the one estimated in this study. Nevertheless, the low incidence of these tumors makes it hard to analyze treatments depending on localization and to determine the best treatment sequence.

Submission Category: General Clinical Practice

Submission Type: Descriptive Report

Session-Board Number: 9-336

Poster Title: Pharmaceutical interventions: ¿How do we do?

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Purpose: The main objetive of pharmaceutical care, is to improve the quality of patient care and ensure that the patient recives the most appropiate therapy. In order to demostrate the impact of pharmaceutical care on the individualized care of patients, pharmacists must record the clinical activities and evaluates results. The aim of this study was to analyze and determine the degree of acceptance of pharmaceutical interventions from the area of unit dose dispensing pharmacy service.

Methods: Descriptive prospective study over a period of 3 months (during the period January to March 2016) for the analysis of pharmaceutical interventions carried out through electronic medical records (SELENE®), on medical prescription with patients admitted to hospital clinical units with unit-dose drug distribution system.
As part of the daily work of pharmaceutical validation, the different interventions were carried out included as "Comments of Pharmacy", in the notes of clinical history of the patient. To facilitate the drafting and subsequent monitoring, predefined AutoText were used. In this way, notifications made by the pharmacist were classified into: clarification of the drug, administration, adjustment for renal impairment, dose or incorrect regimen, duration of treatment, duplication, therapeutic equivalent, interaction, therapy sequential and safety. During the study period a daily record of the interventions made, which were obtained on the previous day, reviewing the prescription to determine the acceptance or not of the intervention. In those where no change was observed at 24h, the situation was reevaluated at 48h. For notifications made during the weekend, the assessment period was increased to 72 hours.

The variables gather were: patient demographic data, type of pharmaceutical notification made, active treatment group and affected, medical service which was directed and non-acceptance or intervention.

Results: During the study period a total of 909 pharmaceutical interventions were performed corresponding to 644 patients, 330 women and 314 men with an average age of 70.5 years (range 5-99).
The degree of acceptance of the recommendations made was 69.1%.
The most common types of pharmaceutical intervention were: duplicity (35.9%), or incorrect dose regimen (17.2%) and adjustment for renal failure (15.5%). Within each type, the degree of acceptance was 72.7%, 72.4% and 62.4%, respectively. In duplicate notifications, most intervention was applied to prescription of analgesia (29.4%), as in the case of incorrect dosage or regimen (14.7%); antibiotics were the largest group intervention in setting renal failure (53.2%).
Regarding medical services, those that most notifications were sent were: Traumatology (21.6%), internal medicine (19.0%) and urology (8.9%). The degree of acceptance of the interventions received was 73.5%, 61.3% and 53.1%, respectively.

Conclusion: : The number of interventions on prescribing consolidates the contribution of pharmaceutical validation and registration in the medical history of the patient.
The percentage of interventions over duplicate prescriptions shows the problems that would have the alert activation by duplication and the risk of generating "fatigue in the prescriptor". On the other hand, the acceptance of interventions not only reflects a positive assessment of the clinic, in addition the result in the modification of prescriptions, affects the impact on the adequacy of treatment for inpatients and therefore in improving the quality of health-care .

Submission Category: Pharmacokinetics

Submission Type: Evaluative Study

Session-Board Number: 9-337

Poster Title: Varibility of exposure parameters of pediatric patients treated with high-dose Methotrexate

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Purpose: Methotrexate (MTX) is an important chemotherapeutic agent that contributes to the high cure rate of pediatric acute lymphoblastic leukemia (ALL), however, high-dose methotrexate (HDMTX) has been associated with potentially severe toxicities.
The purpose of this study was to evaluate the variability of exposure to MTX in pediatric patients with ALL who received a fixed dose of HDMTX to quantify how many patients could benefit from a dosage adjustment.

Methods: Retrospective observational study, between October 2007 and September 2016. We included children up to 18 years old with ALL who received a fixed dose of 5000mg/m² over 24h in accordance with LAL-SHOP-2005 or LAL-SEHOP-PETHEMA 2013 protocols .
The target range of exposure was defined as a steady-state plasma concentration (Cpss) of 65 µM (55-75 µM), this is the suitable Cpss to maintain adequate exposure while minimizing toxicities, considering the extreme values positioned above 75 µM.
The plasma samples were obtained at 2, 12, 23, 36, 42 and 60 hours after the start of infusion. Methotrexate pharmacokinetics parameters were estimated by Bayesian analysis. (software abbott PKs).
MTX was measured by a fluorescence polarization immunoassay (TDx/FLx, Abbot Laboratories) (until February 2015) and by architect chemiluminescence immunoassay (since March 2015).

Results: We included 44 children from 4 to 18 years old (9 ± 4.1) who received 141 cycles of MTX.

The average Cpss was 85.6 ± 22.2 µM (range, 29.4 – 169.2 µM), only 20.6 % of the patients showed values within the target Cpss (55-75 µM), and 73 % showed extreme values (>75 µM). The average Area under the curve (AUC) was 2140.7 ± 616.3 µM.h.
Other pharmacokinetic parameters were analysed, the average clearance and volume of distribution were 85.6 ± 22.2 ml/min/m² and 0.47 ± 0.15 l/kg respectively.

Conclusion: The variability of the clearance explains the variability in MTX Cpss between patients. The variability of exposure to methotrexate (25.9%) would justify the need to optimize therapy. Dosage adjustment could result in fewer extreme Cpss values and less risk of toxicity.

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 9-338

Poster Title: Aztreonam lysine inhaled in chronic bronchopulmonary Pseudomonas aeruginosa infection

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Purpose: Chronic bronchopulmonary colonization by Pseudomonas aeruginosa (PA) and exacerbations arising from it are one of the most important causes of the deterioration of lung function. Aztreonam lysine inhaled (AZLI) could be an alternative to other antibiotics in cases of microbial resistance, poor clinical outcome or intolerance to other antibiotics. To assess the effectiveness and safety of AZLI for the treatment of patients with chronic pulmonary PA infection in a tertiary hospital.

Methods: A descriptive retrospective observational study of patients treated for at least 6 months with AZLI (April/15 to September/16). Demographic, analytical, microbiological and clinical data were collected: sex, age, pathology, Forced Expiratory Volume in the first second (FEV1), colony-forming units (CFU) of PA, AZLI concomitant antibiotic treatment and also antibiotics required for exacerbation of the disease and adverse effects. The effectiveness was assessed measuring the difference between FEV1 pre/post treatment, by the number of exacerbations treated with intravenous or oral antibiotic and by the difference in CFU of PA in sputum pre/post treatment. The safety was measured by adverse reactions related to AZLI and by its tolerability.
The information was obtained from outpatient prescription program Farmatools® and electronic medical records of patients.

Results: 2 men with a median age of 38 years old [29-46] were included. The mean treatment duration was 11,5 months [6-17]. Both patients were colonized with PA and suffering from cystic fibrosis. None of them underwent lung transplantation. They were treated with 75 mg AZLI/8h for 28 days on-off cycles, combined with colistin and with tobramycin. The two patients had moderate or severe pulmonary disease (FEV1 < 75%), improving the mean FEV1 compared to the average of the previous year treatment 5.5% and 2.5%. The number of antibiotic treatment due to disease exacerbation were an average of 3.5 [3-4] treatments in the year before the start of AZLI and 0.5 [0-1] antimicrobial treatments in the subsequent year. The number of CFU of PA was reduced in both patients, 24.33% and 66.95%. AZLI treatment was well tolerated by patients, not referring any adverse reactions.

Conclusion: We observed that AZLI in on-off cycles was an effective drug since there was a FEV1 improvement and a decreasement in number of exacerbations requiring antibiotic treatment and CFU of PA in the sputum. Moreover AZLI was well tolerated.
It seems that AZLI is a safe and effective alternative to other inhaled antibiotics in the treatment of bronchopulmonary PA infection.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 9-339

Poster Title: Educating new residents on computerized physician order entry

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Purpose: To describe and evaluate a resident-focused computerized physician order entry (CPOE) education activity, recently started by our pharmacy service as part of the Sade Medication Use Plan of the hospital. Usually physicians are only trained in CPOE at its implementation at the hospital, without further education to prevent errors, an improvement opportunity our pharmacy answered starting this course we will evaluate on this work.

Methods: At the beginning of their formative period, residents are included in a cross specialty training program to learn the basics about our hospital. Our CPOE education activity was included in that program. We used the MOODLE platform to communicate with residents and provide them with reading material about CPOE prior to the formative event. They were divided in three groups and took part in a 45 minute no-site activity. After a short introduction about CPOE, some exercises were proposed to explore all the functionalities of our CPOE system, using virtual patients created for their practical training. After the on-site training, we kept in touch with the residents via MOODLE and additional written information was provided to them. Finally, they completed a 13-item satisfaction survey we analysed with descriptive statistics in order to improve for next year's activity.

Results: 60 out of the 76 new residents attended the activity. 28 of them downloaded the documents available via MOODLE prior to the course. The overall opinion about the workshop was "very good" for 42% of the residents and "good" for 55% of them. They found the training was "very useful" in 67% of the cases and "useful" in 33% of them. Suggestions were focused

were focused on the activity duration, considered too short by most of them (?). For this reason, the training will last two hours next year.

Conclusion: The preliminary information provided via MOODLE and the virtual patients for the practical training helped the residents learn. The high number of residents that took part in the activity could be related to its inclusion in our hospital's introductory training program. This CPOE education is considered useful for new residents.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-340

Poster Title: Compilation of antibiotic susceptibility of uropathogens in an emergency department to create a department specific antibiogram

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Purpose: Urinary tract infections (UTIs) are one of the most common conditions seen in the emergency department (ED) and are diagnosed over 2.4 million times per year in emergency departments across the nation. Resistance rates of common urinary pathogens have recently seen dramatic increases to multiple antibiotics. The purpose of this study is to provide susceptibility data for pathogens causing UTIs in the ED. The results from this study will assist in creating a department specific antibiogram for the emergency department and in providing ED practitioners appropriate drug therapy options for patients being seen for UTIs.

Methods: Electronic medical records will be reviewed for every patient seen at a 395 bed acute care referral hospital and ED from January 1, 2015 through December 31, 2015 to identify all patients with positive urine cultures. Each patient will be evaluated to determine if they meet the inclusion and exclusion criteria and the data will be divided into ED and inpatient isolates. After identifying the patients with positive urine cultures from the ED, patients with more than one positive culture will only have their first positive culture for a specific pathogen carried through to be evaluated in accordance with Clinical and Laboratory Standards Institute's standards for analyzing cumulative susceptibility data. Susceptibility data specific for uropathogens in the ED will be used to educate the ED providers on primary and alternative therapies for pathogens causing UTIs.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-341

Poster Title: Evaluating mortality in patients with massive pulmonary embolism receiving standard dose versus low dose tissue plasminogen activator (tPA)

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Purpose: The purpose of this study is to compare outcomes in patients with massive pulmonary embolism receiving standard dose (100 mg) or low dose (less than 100 mg) tPA to determine if one dosing regimen is preferred in terms of efficacy and safety. Bleeding risks are dose dependent therefore, the potential for improving safety by reducing the dose while maintaining efficacy has led to few, small, randomized controlled trials comparing standard dose versus low dose tPA. With limited amount of data, it remains unclear whether low dose tPA provides the same efficacy as standard dose tPA while minimizing risk of bleeding.

Methods: This is a retrospective, multi-center, cohort study. This study has been submitted to the Institutional Review Board for approval. Electronic medical records will be reviewed from January 1, 2011 through September 15, 2016 to identify patients aged 18 years and older with suspected or confirmed massive pulmonary embolism who received tPA. Furthermore, chart review will be performed on identified patients to confirm diagnosis of massive pulmonary embolism and to exclude patients who received tPA for medical conditions other than massive pulmonary embolism (e.g., ischemic stroke). Identified patients will be separated into two treatment groups, those treated with standard dose tPA and those treated with low dose tPA. The following data will be collected: patient age, gender, ethnicity, weight, height, patient specific vitals, admitting diagnosis, hospital admission date and time, hospital discharge date and time, facility name, discharge location, patient specific hematological monitoring parameters, tPA dose administered, anticoagulants received inpatient, antiplatelet agents received, home medication list, bleeding events, and in-hospital mortality. The primary outcome measured will be in-hospital all-cause mortality. Secondary outcomes include length

of hospital stay, recurrent pulmonary embolism within 14 days, and in-hospital pulmonary embolism specific mortality.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-342

Poster Title: Effect of discharge medication delivery service on medication adherence

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Purpose: Following discharge, medication non-adherence is common, which often leads to more health concerns. Intermountain Healthcare Community Pharmacy Services have created a program, called Med-READI, with the goal to improve patient adherence following discharge. Med-READI stands for Medication Reconciliation Education Adherence and Delivery Initiative. It is a free service including bedside delivery and personalized counseling, provided by a pharmacist. To determine if Med-READI has an impact on medication adherence, patients with a new onset venous thromboembolism (VTE), discharged with a prescription for a direct oral anticoagulant (DOAC) will be studied.

Methods: To determine whether the Med-READI program is effective in improving medication adherence, an observational, retrospective, case control study will be performed. This study will include retrospective data from the electronic medical record (EMR), discharge medication record, community pharmacy database, and insurance claim history. The adherence of SelectHealth insured patients, discharged with a DOAC prescription, who received the Med-READI service (the experiment group), will be compared to SelectHealth insured patients, discharged with a DOAC prescription, who did not receive the Med-READI service (the control group) from the same hospital. Patients will be matched based on similar baseline characteristics. The primary endpoint will be calculated daily medication possession ratio (MPR), for 120 days following discharge date. Adherence will be defined as ≥0.80 MPR; this cut-off has been widely used in previous research and is considered a valid point to stratify adherence. The date range for this study will be January 1, 2015 to October 31, 2016. Secondary outcomes will include 90-day hospital readmission rates, effect of pharmacist counseling, additional medication refills captured at Intermountain Healthcare community pharmacies, reoccurring VTE events, and major bleeding events. Additional variables, such as

patient's overall history of adherence will also be analyzed. This study is pending IRB approval. We hypothesize that the Med-READI service will show a positive impact on patient medication adherence after being discharged from an Intermountain Healthcare facility.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-343

Poster Title: Impact of pharmacist-delivered inpatient medication counseling on 30-day readmission rates

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Purpose: Optimizing the transition from the hospital to the outpatient setting may decrease the risk for adverse events, promote patient satisfaction, and most importantly, reduce rates of rehospitalization in certain disease states. Pharmacists have the opportunity to directly impact the health care system by effectively providing medication education, medication reconciliation, and discharge planning for these high-risk transition periods. This quality improvement project outlines an innovative approach to implementing and strengthening pharmacists-led medication counseling services at a tertiary care hospital. The primary objective is to assess the impact of pharmacist medication counseling on all-cause 30-day readmission rates.

Methods: A quality improvement project with pharmacist-led medication counseling prior to discharge was implemented in three cardiovascular units at a tertiary care hospital in October 2015. Standardization of pharmacist counseling notes in the electronic medical record was implemented in August 2016, allowing for consistent tracking of patients who receive counseling. Current pharmacy resources can provide medication education to approximately 40% of patients being discharged from these units. The primary outcome assessing the impact of this initiative will be a comparison of 30-day all-cause readmission rates between pharmacist counseling and standard of care. Patients at least 18 years old and discharged from the coronary intensive care unit or acute care cardiology floors with at least one new medication prescribed at discharged will be included. The pilot group receives medication reconciliation, a patient-specific pharmaceutical care plan, and medication counseling by a pharmacist. Standard

of care includes medication reconciliation by a provider and discharge medication review by a nurse. Secondary outcomes will include 30-day Emergency Department visit rate and 30-day mortality rate. Additionally, a secondary analysis will be completed to determine if counseling on specific medications (eg, antiarrhythmics or P2Y12 inhibitors) or counseling patients with specific disease states (eg, heart failure or myocardial infarction) reduces 30-day readmission rates. Data will be analyzed using descriptive statistics and secondary analyses will utilize binary logistic regression.

Results: Pending

Conclusion: Pending

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-344

Poster Title: Rate of Naloxone use in patients receiving an opioid compared to those using opioids and a sedative/hypnotic medication.

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Purpose: Opioids were identified in 75.2% of all pharmaceutical-related overdose deaths in 2010. Data also indicates that as the percentage of in-patient opioid use increases, so does the opioid related adverse events per patient exposed. Where the data is lacking is the effect that concomitant use of opioids and other sedative/hypnotics have on drug induced adverse events in the acute care setting. This study is aimed to measure the rate of use of naloxone in patients using opioids alone compared to those using opioids and a sedative/hypnotic in combination.

Methods: A retrospective chart review of in-patients throughout the Intermountain Healthcare system composed of 22 hospitals located in Utah and Idaho was conducted between January 2012 and December 2014. Patients included in this study were 18 years of age or older and received at least one opioid medication throughout their stay. Patients in the emergency department and the labor and delivery unit were excluded from the study population. The primary outcome is the rate of naloxone use in patients that received concomitant administration of an opioid and a sedative/hypnotic agent compared to an opioid alone. Medication lists from included patients included any opioid with or without the addition of naloxone, benzodiazepines, non-benzodiazepine sleep aids, muscle relaxants or other sedative-hypnotics. As a secondary outcome, analysis of the individual drug classes will also be performed to identify any differences in adverse events, with the use of naloxone being the surrogate marker. Descriptive and inferential statistics will be used to analyze and assess the collected data.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-345

Poster Title: Evaluation of sodium glycerophosphate (NaGP) versus inorganic phosphates in the incidence of metabolic bone disease (MBD) in premature neonates

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Purpose: Neonate nutritional guidelines recognize that parenteral nutrition (PN) predisposes the patient to MBD. Further, currently approved inorganic phosphates exacerbate MBD by limiting the amount of calcium and phosphate allowed in PN due to higher precipitation risks. In 2013, shortages of inorganic phosphate lead to the temporary importation of organic NaGP. NaGP is reported to lessen precipitation risk and allow for higher concentrations of calcium and phosphate in PN. The objective of this study is to determine if the use of organic phosphates in PN decrease the incidence of MBD when compared to inorganic phosphates in premature neonates.

Methods: This study is submitted to the Institutional Review Board and awaiting approval. Patients included in the study will be premature neonates diagnosed with MBD while receiving PN in the hospital. The use of ICD-9 and ICD-10 codes will be used to identify any premature neonates diagnosed with MBD from the years 2010 to August 2016. Imagining results, if available, will be used to verify the diagnosis of MBD. The following data will be collected: gestational age, weight, gender, PN ingredients, serum calcium, ionized calcium, serum phosphate, alkaline phosphatase, parathyroid hormone, serum vitamin D, renal function test, liver function tests, serum trace elements, medications used during hospital stay, microbiology results, and duration of PN. All data will be kept in a secure database with patient identifiers removed in order to protect the patient's confidentially. The incidence rate of MBD will be pooled and averaged for patients on organic compared to inorganic phosphates. Secondary markers of MBD such as alkaline phosphatase, parathyroid hormone will also be compared to patients receiving organic phosphates versus inorganic phosphates.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-346

Poster Title: Development of a scoring tool to identify patients to target during pharmacist-provided transitions of care medication reconciliation

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Purpose: Transitions of care (TOC) medication reconciliation improves continuity of patient care during transition periods from inpatient to outpatient settings. Several patient screening tools have been developed to help healthcare providers identify patients at risk of readmission. While these tools have been validated in the hospital setting, they have not been validated in the outpatient setting. If pharmacists could better target patients at risk of 30-day readmission, they could focus efforts on these patients and improve productivity. The purpose of this study is to develop an outpatient risk-assessment tool to identify patients for pharmacists to target during TOC medication reconciliation.

Methods: A retrospective chart review will be conducted on a historical cohort of transitions of care patients for whom a pharmacist previously performed medication reconciliation. The historical data collected for each patient includes: number of changes to medication list, number of changes to drug therapy, number of drug-drug interactions, number of adverse drug reactions, number of access issues, number of times patient/caregiver was redirected, and pharmacist time spent on the TOC follow up. Additional data collected from the electronic medical record will include: age, sex, reason for hospital admission, medications (including number of medications), laboratory values, length of hospital stay, ICD coded procedures while admitted to the hospital, chronic medical conditions, and admission within the previous year. The patient data collected will be used to develop an outpatient 30-day readmission risk assessment tool to allow pharmacists to better target patients during transitions of care. The level of risk determined by the tool will then be compared to pharmacist time spent, changes to medication list/drug therapy, number of drug interactions, number of adverse drug reactions, and access issues obtained from the historical data to determine if the data correlates to level of risk using the tool.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-347

Poster Title: Economic Implications of Collaborative Pharmacist Support in Primary Care

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Purpose: The purpose of this study is to investigate the value-based economic impact of outcomes obtained by ambulatory care clinical pharmacist (CP) interventions in the management of patients with Type 2 Diabetes (T2DM) and High Blood Pressure (HBP) as provided under collaborative drug therapy management (CDTM) versus the outcomes of patients not managed by ambulatory care CP who served as the control. Controls were selected from the central Salt Lake region and must have had a primary care provider (PCP) visit within case enrollment time frame and matched using propensity matching in a 1:3 ratio on a number of parameters.

Methods: This is a retrospective, observational cohort using matched controls for each patient who received the intervention: ambulatory care CP management of T2DM and/or HBP under CDTM. The primary outcome is the difference in efficiency of the primary care team with the addition of a CP in order to achieve maximum number of patients at goal. Measurements will include the number of visits and time spent by a CP and PCP to achieve superior results compared to the control group. It will be assumed that in order to achieve similar results the PCP would have to spend the same amount of time with each control patient. The difference in time will be related to the cost for additional PCP time minus any additional revenue generated by their visits. The hypothesis is that the cost to have a PCP theoretically reach the same results would be prohibitive compared to the cost of including a CP. Additional measurements will include improved efficiency of the primary care team and estimated economic impact of superior achievement of goals in CP group versus the control group using local estimated costs and savings associated with meeting hemoglobin A1c and HBP goals. This will involve relating achievement of clinical goals to decrease in complications and adverse events seen in clinical trials. Secondary outcomes include estimated overall cost-avoidance by assessing hospitalizations and/or ED visits.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-348

Poster Title: Utilization of 340B savings to develop a pharmacy-driven diabetes starter kit for pediatric patients newly diagnosed during hospital admission

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Purpose: Newly diagnosed patients with diabetes are faced with many barriers to care including the high cost of diabetic supplies and lack of education regarding the complex nature of diabetes treatment. Children with diabetes represent an especially vulnerable population that would benefit from enhanced quality of care. The purpose of this program is to provide a 340B-funded diabetes starter kit to newly diagnosed pediatric patients. The starter kit would provide improved access to diabetes medications and supplies at low costs prior to discharge, encourage early compliance, and provide a platform for pharmacist-driven education to patients and their caregivers.

Methods: For pediatric patients with new onset diabetes admitted to Utah Valley Hospital (UVH), a new service to provide access to low cost diabetes medications and supplies is in development. Pharmacists and nurse educators will be surveyed to determine what medications, supplies, and educational materials should be included in the starter kit. Diabetes medications will be supplied through Timpview Pharmacy, the affiliated outpatient pharmacy of UVH. The supplies in the starter kit will be paid for through savings from the 340B Drug Pricing Program in which UVH participates. The number of patients who may benefit and the savings available through the 340B program will be estimated and a budget for the kit determined. Once the kit components are finalized, they will be purchased and stored in a separate inventory from other supplies. Providers, diabetes educators, and other pediatric floor staff will be educated on the implementation of the service. Pharmacists covering the pediatric floor will identify patients who qualify for the starter kit . Before discharge, a process will be developed

to provide patients with the starter kit and to be educated by a pharmacist. A follow-up questionnaire will be distributed to patients and caregivers.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-349

Poster Title: Determining optimal initial heparin infusion rates in pediatric patients on extracorporeal membrane oxygenation (ECMO)

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Purpose: Patients who receive ECMO require anticoagulation, most commonly with heparin, and close monitoring to avoid the bleeding and clotting complications inherent to ECMO therapy. At this time the optimal initial heparin infusion rate is not known. We hypothesize that the initial heparin infusion rate used by clinicians can be improved, resulting in a shorter time to therapeutic anticoagulation. The purpose of this study is to determine the optimal initial infusion rates of heparin for pediatric patients receiving ECMO and thereby minimize the time to therapeutic anticoagulation.

Methods: The institutional review board of Primary Children's Hospital (PCH) has approved this retrospective, observational study. Patients 18 years of age or younger admitted to PCH from March 2012 to December 2016 who received heparin anticoagulation for ECMO will be included in the study. Data to be collected includes patient demographic information (weight, height, BSA, age, gestational age, and race); laboratory markers related to anticoagulation (unfractionated heparin (UFH) anti-Xa levels, partial thromboplastin time, activated clotting time, prothrombin time, international normalized ratio, complete blood counts, and other pertinent labs); medication data (date and time of the start of heparin therapy, all dose adjustments, and other concomitant anticoagulants). Patient outcomes to observe include time to therapeutic heparin anticoagulation as measured by UFH anti-Xa and associated heparin rate changes, hospital length of stay, intensive care unit length of stay, clinically significant bleeds, and death. ECMO outcomes include circuit clotting, time to circuit change due to circuit failure, bleeding, and thrombotic complications. Using the above variables we hope to build a model

that predicts the optimal initial heparin rate based on patient specific values and the type of ECMO circuit deployed.

Results: n/a

Conclusion: n/a

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-350

Poster Title: Patient characteristics associated with elevated serum lidocaine levels

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Purpose: Lidocaine is a Class Ib antiarrhythmic agent used for the treatment of ventricular arrhythmias. Adverse effects associated with intravenous lidocaine include altered mental status, visual disturbances, tremors, and seizures. These effects are typically dose-dependent, with the risk of toxicity increasing when levels exceed the therapeutic range of 1.5 to 5mcg/mL. Patients with congestive heart failure and/or hepatic dysfunction have an increased risk of toxicity and require lower doses of lidocaine. However, interpatient variability in levels does not appear to be based on these factors exclusively. This study seeks to determine other characteristics associated with toxic serum lidocaine levels.

Methods: This is a multicenter, retrospective electronic medical record review. Patients will be evaluated from January 1, 2000 to December 31, 2015. Patients will be eligible for inclusion if they are at least 18 years of age, received intravenous lidocaine, and had at least one lidocaine level drawn during hospitalization. Prisoners and pregnant women will be excluded. Demographic and clinical data will be evaluated in patients who have supratherapeutic levels of lidocaine greater than 5mcg/mL compared to those with levels within the range of 1.5mcg/mL to 5mcg/mL. Data collected will include age, weight, height, gender, lidocaine levels, average lidocaine dose during infusion, creatinine clearance, serum potassium, ejection fraction, liver function tests, concomitant medications, and past medical history. Lidocaine levels drawn within 12 hours of a previous lidocaine level for the same patient will not be evaluated. Otherwise, all lidocaine levels will be assessed as individual events, considering patient characteristics are likely to change throughout hospital admission. Data will be analyzed using Generalized Estimating Equations. It is anticipated that this study will have multiple encounters per patient. Each encounter will have a unique binary outcome representing whether the patient's lidocaine levels were toxic or within normal range. Data collected will be compared to

assess which predictors significantly influence toxic lidocaine levels. This study was approved by the healthcare system Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 9-351

Poster Title: Does pharmacist-driven nasal swab methicillin-resistant Staphylococcus aureus (MRSA) PCR screening decrease time to de-escalation of MRSA coverage in patients with pneumonia?

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Purpose: Vancomycin is frequently used as empiric therapy in patients with pneumonia. MRSA nasal PCR screening, with a high negative predictive value for MRSA in pneumonia, can assist in de-escalation of MRSA coverage in patients with pneumonia. Recently, a protocol was implemented to allow pharmacists to order the PCR in pneumonia patients and de-escalate MRSA coverage following a negative test result. The objective of this study is to evaluate the impact on time to de-escalation of MRSA coverage in pneumonia by a pharmacist-driven nasal MRSA PCR testing protocol as compared to standard of care.

Methods: Intermountain McKay Dee Hospital's electronic medical record system will be used to identify patients 18 years and older with a diagnosis of pneumonia who had empiric MRSA coverage (vancomycin or linezolid) initiated for pneumonia. Exclusions include cystic fibrosis, nasal mupirocin on medication history, patients receiving MRSA coverage for any other indication, and vulnerable populations including pregnant women, prisoners, and Intermountain employees. The following data will be collected through chart review: age, gender, birth date, pneumonia ICD9 codes and equivalent, allergies, admission and discharge dates, concurrent disease states, home medications, nasal MRSA PCR with results, chest x-rays, vancomycin troughs, initiated and discontinued times of antibiotics, blood/respiratory culture and susceptibilities, BMP, CBC, and vitals. Time to de-escalation will be calculated from the time of order placement to order discontinuation of linezolid or vancomycin. The difference in time to MRSA de-escalation will be compared from pre-pharmacist driven MRSA nasal swab protocol time (10/01/12 to 02/28/2013) to during pharmacist-driven MRSA nasal swab protocol time (10/01/2016 to 02/28/2017) to evaluate the effectiveness of pharmacist-driven MRSA nasal PCR screening in time to de-escalation. Additional outcomes will be the incidence of

nephrotoxicity, as defined as an increase in creatinine of 0.5 mg/dL or a 50 % reduction in creatinine clearance, and number of patients restarted on MRSA therapy following pharmacist discontinuation.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-352

Poster Title: Diuretic efficacy of the co-administration of albumin and furosemide in cirrhotic patients

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Lance Lindberg

Purpose: There is little data and no current guideline recommendations regarding the use of albumin in combination with loop diuretics as a method of diuresis in cirrhotic patients. Because albumin is a colloid, the theory is that the oncotic gradient will pull the extravascular fluid into the vasculature which will lead to greater diuretic efficacy of furosemide. The objective of this study is to assess the diuretic efficacy of intravenous furosemide-albumin combination therapy compared to intravenous furosemide without albumin specifically in cirrhotic patients.

Methods: This IRB-approved study is a retrospective electronic medical record (EMR) chart review of data mined from the Help1™ and Help2™ systems from November 1, 2007 to September 30, 2015. The two comparison groups are furosemide without albumin for diuresis and the combination of furosemide and albumin for diuresis. Only cirrhotic patients will be included and will be defined based on at least two overlapping International Classification of Disease, Ninth revision (ICD-9) coding diagnoses that incorporate sequelae of end stage liver disease. Exclusion criteria are defined as diagnoses that may complicate the evaluation of diuresis such as nephrotic syndrome, chronic kidney disease and heart failure. The primary outcomes will be urine output within 8, 12 and 24 hours after the initial dose of diuretic and weight loss within 24 hours of the initial dose. Secondary outcomes will include hospital length of stay and need for abdominal paracentesis. Baseline differences between groups will be mitigated with the use of a propensity score and/or logistic regression including variables associated with the receipt of albumin, such as age, sex, and MELD score. The following data will be collected: BUN, AST/ALT, albumin level, total bilirubin, INR, urine output, diuretic

administration and doses, albumin administration and doses as well as fluid intake. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-353

Poster Title: Antithrombotic use for acute ischemic stroke secondary to infective endocarditis and the risk of major hemorrhage: a multi-center retrospective cohort study

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Purpose: Infective endocarditis (IE) can lead to cerebrovascular complications (CVCs), such as mycotic aneurysms and acute ischemic strokes (AIS). The use of antithrombotic therapy for secondary prevention in IE patients with AIS is controversial, however. Some literature suggests hemorrhagic complications increase when antithrombotics are used, while other studies found antithrombotics beneficial in preventing AIS. Ultimately, the risk/benefit ratio of antithrombotic therapy in IE patients with AIS is not well defined. This retrospective cohort study will further elucidate the risk of hemorrhagic complications in patients with IE and AIS receiving antithrombotic versus no antithrombotic therapy.

Methods: This will be a retrospective cohort study conducted within Intermountain Healthcare (IHC) inpatient, acute care hospitals between November 1, 2007 and September 30, 2015. Data will be retrieved using electronic medical records and manual chart review. We aim to determine the risk of hemorrhagic complications in IE patients with AIS receiving antithrombotic vs. no antithrombotic therapy for secondary prevention of AIS. Patients admitted with AIS secondary to IE as defined by relevant International Classification of Diseases, Ninth Revision coding and subsequent manual chart review will be included. The primary outcome will be incident in-hospital major bleeding, defined as fatal bleeding, bleeding into a critical organ space, or bleeding requiring ≥2 units packed red blood cells. Secondary outcomes will include the incidence of minor bleeding, major or minor bleeding, all-cause mortality, and subsequent CVCs. Additional variables including microbiology, imaging, left-sided vs. right-sided IE, native vs. prosthetic valve involvement, pertinent lab values, APACHE (Acute Physiology and Chronic Health Evaluation) II score, Charlson comorbidity index score, history of

CVC, previous use of antithrombotic medications, age, timing of antithrombotic use, and intensive care unit medication use will be incorporated into a multiple logistic regression and/or propensity score to analyze their impact on major bleeding. Institutional Review Board approved this study via expedited review.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-354

Poster Title: Acute kidney injury in the setting of hyperchloremia in patients with traumatic brain injury

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Purpose: There are reports of acute kidney injury (AKI) from hyperchloremia-induced vasoconstriction of the renal tubules. The association has been examined in septic and post-surgical patients, however, the data in trauma patients is limited, specifically in traumatic brain injury (TBI). The purpose of this study is to examine the association of hyperchloremia from hypertonic saline administration and the incidence of AKI in adult patients with TBI.

Methods: This will be a single-center, retrospective cohort study and has been submitted to the Institutional Review Board for approval. Patients with TBI admitted to the intensive care unit who received hypertonic saline will be identified through the Trauma Registry and Enterprise Data Warehouse. Patients will be excluded if the following are met: Cockcroft-gault creatinine clearance of < 50 mL/min on admit (within first 24 hours), AKI on admission (within first 24 hours) defined as more than two-fold increase in serum creatinine, glomerular filtration rate decrease by >50%, or urine output < 0.5 mL/kg/hr for >12 hours, and history of chronic kidney disease documented in patient chart. Cohorts are defined by the degree of hyperchloremia: mild (110-119 mEq/L), moderate (120-129 mEq/L), and severe (>130 mEq/L), which will be determined based upon peak chloride levels within a 10-day period after initial onset of injury. The primary outcome is the incidence of AKI as defined by RIFLE criteria within 7 days after peak chloride level. Secondary outcomes include identifying risk factors associated with AKI by collecting demographic information, comorbidities, concurrent nephrotoxic medications and/or contrast given, concurrent infection, vasopressor exposure, and additional therapies such as blood transfusion, drain placement, invasive mechanical ventilation, and operating room

interventions. Secondary outcomes include the need for renal replacement therapy from the AKI-induced hyperchloremia during admission.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-355

Poster Title: Comparison of extended interval and conventional gentamicin dosing protocols on renal function in preterm neonates born less than 30 weeks

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Purpose: Critically ill patients admitted to the newborn intensive care unit (NICU) are often administered gentamicin because of its effectiveness in neonatal sepsis. In 2014, our institution implemented an extended-interval dosing protocol to standardize dosing regimens, decrease time to target concentrations, and minimize phlebotomy losses. Since implementation, a trend toward decreased renal function has been observed anecdotally in our extremely low-birth weight infants. This study aims to evaluate renal function in NICU patients born < 30 weeks gestation who received gentamicin at conventional doses compared with extended-interval doses within 24 hours of life.

Methods: This retrospective, single-center, cohort study was approved by our Institutional Review Board. Our review will include all subjects born at < 30 weeks gestation who received at least one dose of gentamicin within 24 hours of life during two specific time periods. Infants born January 1, 2013, through December 31, 2013, received conventional gentamicin dosing, and will be compared with infants who received extended-interval dosing born January 1, 2015, through December 31, 2015. Subjects diagnosed with hypoxic-ischemic encephalopathy (HIE) or subjects with congenital or anatomical renal abnormalities will be excluded. The primary endpoint is comparing the impact of extended-interval with conventional gentamicin dosing on renal function. Secondary endpoints include modifications to protein intake and the incidence of changing from gentamicin to alternative therapy. Renal function will be determined by changes in serum creatinine, blood urea nitrogen, and urine output for a period of 96 hours.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-356

Poster Title: Safety and effectiveness of apixaban versus warfarin in patients with severe renal dysfunction

Primary Author: Kyle Malhotra, Intermountain Medical Center, UT; **Email:** kyle.malhotra@imail.org

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Purpose: There is an overall lack of data assessing apixaban use in patients with severe renal dysfunction. Large randomized controlled trials assessing apixaban versus warfarin excluded patients with a SCr > 2.5 mg/dL and/or CrCl < 25 mL/min. This study will evaluate apixaban's safety and effectiveness compared to warfarin in patients with severe renal dysfunction.

Methods: This is a multi-center retrospective review. Adult patients were enrolled if they were seen at an Intermountain Healthcare (IHC) facility between December 28, 2012 and August 23, 2015, had severe renal dysfunction defined as SCr > 2.5 mg/dL and/or CrCl < 25 mL/min, and were prescribed either apixaban or warfarin for therapeutic anticoagulation. Patients with a bleeding incident secondary to trauma, who had a bleeding incident during hospitalization after having received a dose of both apixaban and warfarin, or who were diagnosed with liver failure were excluded. The primary outcome was clinically relevant bleeding, defined as any bleeding event requiring an emergency department visit or inpatient admission. Secondary outcomes assessed were thrombotic events (deep vein thrombosis, pulmonary embolism, or stroke), minor bleeding events, and major bleeding events. Patients will be assessed for at least one year after enrollment. Events will be evaluated throughout the study period and reported as annualized event rates. This study was approved by IHC's Institutional Review Board.

Results: In progress.

Conclusion: In progress.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-357

Poster Title: Ketamine for refractory and super-refractory status epilepticus

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Purpose: Ketamine is an N-methyl-D-aspartate (NMDA) receptor antagonist, used for a variety of indications including depression, sedation, and seizure cessation. Due to its unique mechanism of action, ketamine has been used in conjunction with GABA-ergic antiepileptic drugs and anesthetics in refractory and super-refractory status epilepticus (R/SRSE). There are a paucity of studies comparing the relative effectiveness of ketamine in patients with R/SRSE, however. The purpose of this study is to evaluate the effectiveness of R/RSRE regimens with and without ketamine within the Intermountain Healthcare System.

Methods: This will be a retrospective cohort study of patients diagnosed with R/SRSE receiving at least one antiepileptic anesthetic infusion within Intermountain Healthcare (IHC) between November 1, 2007 and August 31, 2016. Eligible patients will be identified via electronic medical records using International Classification of Diseases, Ninth and Tenth Revision (ICD-9/10) codes and medication administration records. The following demographic and outcomes data will be collected: patient age, gender, weight, height, primary admit diagnosis, outpatient medications, pertinent past medical history, social history, and laboratory values upon admission and throughout hospitalization such as creatinine phosphokinase, triglycerides, and basic metabolic panels, Charleston Comorbidity Index, APACHE II score, Glasgow Coma Scale (GCS) score, vital signs, vasopressor use, electroencephalogram (EEG) report findings, hospital and intensive care unit (ICU) lengths of stay, duration of mechanical ventilation, duration of status epilepticus prior to and following ketamine administration, duration of antiepileptic infusions, and antiepileptic medications utilized. The primary endpoint will be the time to the first 24-hour period free of all continuous sedative or antiepileptic infusions in subjects receiving ketamine versus no ketamine as part of their R/SRSE treatment regimen. Secondary

endpoints include mortality, total number of antiepileptic drugs used, ICU-free and mechanical ventilation-free days, frequency of subjects requiring vasopressors, presence of hemodynamic derangements and discharge disposition. The study is currently undergoing expedited review by the IHC Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-358

Poster Title: Assessing time to coronary artery bypass grafting (CABG) in ST-elevation myocardial infarction (STEMI) patients

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Purpose: Ideally coronary artery bypass grafting (CABG) is delayed 5-7 days after administration of a P2Y12 inhibitor. However, loading doses are required for patients that undergo percutaneous coronary intervention (PCI). A minority of ST-elevation myocardial infarction (STEMI) patients undergo CABG, yet administration of P2Y12 inhibitors is commonly held until coronary anatomy is known. The study aims to assess the average time from hospital arrival to CABG in STEMI patients not receiving a P2Y12 inhibitor loading dose, which will help elucidate if this time is clinically different than the delay in CABG that would be ideal if a P2Y12 inhibitor was given

Methods: This study is a multi-center, retrospective electronic medical record review. Patients at least 18 years of age admitted from October 29, 2007 to September 30, 2015 with STEMI requiring CABG will be included. Patients that underwent PCI, received thrombolytic therapy, or took P2Y12 inhibitors outpatient will be excluded. The Intermountain Healthcare electronic database warehouse and The Society of Thoracic Surgeons database will be used to identify patients who have been admitted for STEMI and subsequently went to CABG. The primary endpoint is time to CABG from hospital admission. Secondary endpoints include incidence of major bleeding, length of hospital stay, length of intensive care unit stay, and 30--day mortality. Subset analyses will assess secondary end points in regard to how long patients waited to go to CABG as well as time to CABG in patients who received a loading dose of P2Y12 inhibitor compared to those patients who did not. This study has been submitted to the institutional review board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-359

Poster Title: Influenza infection and the risk of thromboembolic events in critically ill patients

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Purpose: The influenza A/H1N1 outbreak in 2009 became the first pandemic of the 21st century. Since the emergence of the pandemic H1N1, reported cases of severe influenza infections and requirement of intensive care unit (ICU) hospitalization have increased. Potentially higher rates of thromboembolism have also been reported in these patients. The purpose of this study is to determine whether critically ill patients with influenza infections have a higher incidence of 30-day thromboembolic events (TE) compared to those with non-influenza respiratory viral infections. The study also aims to identify specific risk factors associated with the development of TE.

Methods: This study is a retrospective, multicenter cohort compiled using electronic medical records and chart review of patients admitted with respiratory viral infections and spending greater than 24 hours in an ICU within Intermountain Healthcare, from November 1, 2007 to August 23, 2016. Patients who are pregnant, receiving therapeutic anticoagulation within 48 hours of admission, presenting with TE or trauma/surgery within 7 days prior to or following admission, and previously diagnosed thrombophilia are excluded. The primary endpoint is 30-day incident TE, compared between those diagnosed with influenza versus non-influenza respiratory viral infections. Presence of influenza infection is identified via positive lab findings of real-time reverse transcriptase polymerase chain reaction (PCR) tests or influenza antigen testing. Non-influenza respiratory infections is identified through respiratory film array PCR. TE includes deep vein thrombosis, pulmonary embolism, acute ischemic stroke, acute myocardial infarction, and arterial thrombosis, identified using a combination of Natural Language Process and ICD-9/10 codes cross referenced with manual chart review for confirmation. Additional

subgroup analysis will compare 30-day incident TE between 2009 H1N1 influenza A and other respiratory viral infections. Multiple logistic regression and/or propensity score will use the following additional variables for TE risk evaluation: age, sex, co-infection, disease severity, estrogen therapy, obesity, previous TE, mechanical ventilation, length of ICU stays, chemoprophylaxis, and presence of central venous catheters. Institutional Review Board expedited review is currently pending.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-360

Poster Title: Effect of amlodipine on calcineurin inhibitor induced renal dysfunction following allogeneic hematopoietic stem cell transplantation

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Additional Author (s):
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Purpose: Calcineurin inhibitors are widely used immunosuppressive medications for the prevention of graft-verse-host disease following allogeneic hematopoietic stem cell transplantation (allo-HSCT). Their use is associated with a high incidence of nephrotoxicity and hypertension. In renal transplantation, calcium channel blockers are hypothesized to prevent calcineurin inhibitor induced nephrotoxicity and have become standard treatment for hypertension. No study has evaluated their effect on renal function in the post allo-HSCT population. This study will evaluate the impact amlodipine, a calcium channel blocker, has on renal function in allo-HSCT patients receiving a calcineurin inhibitor.

Methods: The institutional review board has approved this study. Three hundred and sixty-two subjects who have undergone allo-HSCT between January 1, 2006 and August 31, 2016 have been identified for enrollment. Those under the age of 18 or undergoing repeat allo-HSCT have been excluded. Subjects will be placed into one of two groups based on whether or not they were treated with amlodipine. Amlodipine treatment must have begun prior to hospital discharge and continued for a minimum of two weeks. Subject data will be collected retrospectively and include one year from initiating amlodipine or until they fall out of their study group based on the following criteria: loss to follow up, calcineurin inhibitor discontinuation, death, or the date of August 31, 2016 is reached. Data will be collected from electronic medical records. Subject identifiers will be removed before data is analyzed. The data to be collected will include: patient age, gender, date of birth, weight, height, diagnosis related to transplant, serum creatinine levels, BUN levels, blood pressures, medications prescribed, and

dates of hospital admission, hospital discharge, and death. The primary outcome will be the mean change in serum creatinine over time. Hospitalization due to acute kidney injury will be a secondary end point. The following confounding variables will be accounted for: incidence of GVHD, supratherapeutic calcineurin inhibitor levels, use of nephrotoxic drugs, and blood pressure.

Results: Pending

Conclusion: Pending

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-361

Poster Title: Rates of serious adverse events associated with targeted specialty therapies in the treatment of inflammatory diseases at a managed care plan: a historical claims analysis

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Purpose: While effective in treating inflammatory conditions, targeted specialty therapies have been associated with serious adverse events (SAEs) requiring hospitalization. The primary objective is to compare the rates of SAEs among specialty therapies used to treat immune-mediated inflammatory diseases (IMIDs) in a managed care population. Secondary outcomes include discontinuation rates due to SAEs and the difference in rates of SAEs among patients taking specialty therapies with or without conventional systemic therapies.

Methods: This historical claims analysis, approved by the institutional review board, includes patients at least 2 years of age with an ICD-9 or ICD-10 diagnosis code of a select IMID (i.e., ankylosing spondylitis, Crohn's disease, juvenile idiopathic arthritis, psoriasis, psoriatic arthritis, rheumatoid arthritis, ulcerative colitis) between 7/1/2009 and 6/30/2016. Patients must have a pharmacy or medical claim for a specialty therapy (i.e., tocilizumab, certolizumab, secukinumab, etanercept, vedolizumab, adalimumab, anakinra, abatacept, infliximab, golimumab, ustekinumab, ixekizumab, apremilast, tofacitinb) between 7/1/2010 and 6/30/2015, with the index date defined as the first specialty claim. Patients must also be continuously enrolled in the plan for at least 1 year prior to and after the index date. Baseline characteristics will be reported using descriptive statistics. Unadjusted SAE incidence rates and associated discontinuation rates in the post-index period will be compared using a one-way analysis of variance. Pairwise comparisons between specialty therapies will be calculated using t-tests applying a Bonferroni correction to account for multiple comparisons. Post-index SAE incidence rate ratios will be compared using a zero-inflated negative binomial regression while controlling for potential confounders. Finally, an analysis will be conducted to investigate the

difference in rates of SAEs between patients with and without concurrent conventional systemic therapies in the post-index period using independent t-tests.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-362

Poster Title: Medication utilization evaluation of eptifibatide at a community hospital in Salt Lake City, Utah

Primary Author: Leila Khurshid, St. Mark's Hospital, UT; **Email:** leila.khurshid@mountainstarhealth.com

Additional Author (s):
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Purpose: Eptifibatide blocks the platelet glycoprotein IIb/IIIa receptor and reversibly blocks platelet aggregation, preventing thrombosis. It is indicated in the treatment of ACS for patients undergoing PCI or in the setting of elective PCI and often used off-label to support PCI during STEMI when administered at the time of primary PCI. Use of this medication can result in increased bleeding and have a substantial financial impact on the patient and the health system. The purpose of this retrospective medication use evaluation is to characterize eptifibatide use at St. Mark's Hospital and to evaluate optimal, safe, and cost effective treatment of patients.

Methods: All patients who received eptifibatide therapy at St. Mark's Hospital from January 1 to September 30, 2016 were evaluated for age, weight, renal function, location of treatment initiation, dose, time of administration, duration of therapy, indication, concurrent therapy and time of its administration, change in hemoglobin, route of administration, and type of closure device. In addition, lengths of hospital stay and discharge disposition were collected. Data was accessed using electronic medical records and information was collected using a standardized data collection form. The data was subsequently analyzed to determine rates of bleeding and cost to the institution. Bleeding rate was defined as ≥ 3 g/dL decrease in hemoglobin from baseline or documented hematoma. Using this information, a recommendation for optimal, safe, and cost effective treatment of patients was formulated.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-363

Poster Title: Creation and implementation of a new chemotherapy training program with policies and procedures specifically designed to ensure staff competence in accordance with USP .

Primary Author: Darren Seegmiller, St. Mark's Hospital, UT; **Email:** darren.seegmiller@gmail.com

Additional Author (s):
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Purpose: A comprehensive chemotherapy training program does not currently exist at St. Mark's Hospital. It is critical that pharmacy staff who handle these drugs be informed of risks and thoroughly trained to safely prepare these agents using proper aseptic technique. This project is intended to provide a comprehensive chemotherapy training program that will prepare our institution for the implementation of standards set by USP Chapter < 800>.The goal of implementing a new chemotherapy training program is to build employee confidence and knowledge to safely and effectively compound chemotherapy agents.

Methods: The current model for chemotherapy training at St. Mark's Hospital consists of a one-on-one demonstration only presentation performed by a designated pharmacist. A comprehensive training program will be established for all pharmacy staff which will include both written and audio/video presentations in addition to the standard one-on-one demonstration. It will also include the addition of final testing and an assessment of the new training program. Each trainee will receive the current standard training followed by an assessment comprised of a hands-on proper technique test, competency quiz, and survey to assess confidence. Trainees will then receive the new comprehensive training followed by the same assessment received after the standard training. The results from each training technique will then be compared to measure improvements in competency and confidence in compounding chemotherapy agents.

Results: N/A

Conclusion: N/A

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-364

Poster Title: Evaluating the impact of pharmacist led intervention(s) in patients with COPD

Primary Author: Caroline Droste, Appalachian College of Pharmacy, VA; **Email:** cdroste@acp.edu

Additional Author (s):
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Purpose: Chronic Obstructive Pulmonary Disease (COPD) has remained the 4th major cause of death for the past decade. Central Appalachia is abundant with coal miners and moderate to strong increases in mortality from COPD, primarily in the elderly population. Pharmacists can play a pivotal role in managing COPD in the outpatient setting. Implementing spirometry testing in the community setting and evaluating patient education and adherence can lead to better disease management, fewer hospitalizations, and improved overall quality of life. This study will determine if pharmacists' interventions including patient counseling, medication management, spirometry testing, and adherence encouragement improve outcomes related to COPD.

Methods: This study is currently pending Institutional Review Board approval. Patients at two independent pharmacies and a free clinic in Central Appalachia, will conduct a patient assessment survey to determine baseline COPD knowledge and correct inhaler technique. Additionally, a spirometry reading will be conducted at the primary visit to determine the current stage of COPD and correct medication regimen based on the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines. Subjects will be seen every 30 days to assess adherence, inhaler technique, spirometry data, and symptoms/exacerbation changes. If patients are unable to be seen every 30 days, patients will be assessed over the phone to obtain as much information as possible related to adherence, symptoms, exacerbations, and technique. Finally, the subject will complete a final spirometry reading and retake the patient assessment survey.
Data will be collected on patient demographics, number of medications, classification/severity of COPD, FEV1/FVC ratio, Peak flow reading, knowledge of disease state, number of missed

doses, number of errors in inhaler technique, and number of time patient has been hospitalized for acute COPD exacerbation in the past year.
Statistical analysis will be performed using chi square and logistic regression analysis.

Results: N/A

Conclusion: N/A

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-365

Poster Title: Effect of Community Pharmacy Outreach on Immunization Rates in Rural Central Appalachia

Primary Author: Travis Garrett, Appalachian College of Pharmacy, VA; **Email:** tgarrett@acp.edu

Additional Author (s):
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Purpose: The influenza virus is responsible for many hospitalizations and deaths each year. According to the CDC the best method of prevention against influenza is vaccination. Healthy People 2020's goal for non-institutionalized adults aged 18 to 64 years who are vaccinated annually against seasonal influenza is 80%. The 2010-2011 influenza season reported a baseline immunization rate of 24.9%. Community pharmacists are in an ideal position to increase immunization rates. Determining the optimal mode of outreach will allow pharmacists to increase immunization rates at a higher level of efficiency.

Methods: Annual influenza immunizations will be encouraged to patients through various modes of outreach including social media, flyers, pamphlets, posters, pharmacist consultation, word of mouth, and flu clinics. Any patient offered an influenza vaccination will be asked to complete a short questionnaire. Telephone offers will be conducted and document by pharmacy representatives. A declination of either vaccine or questionnaire will be recorded as refused for both groups. Each patient motivated to receive immunization will be screened to ensure immunization is appropriate and all necessary documentation (pre-screening questionnaire, consent to vaccination, and Vaccine Information Sheet or VIS) will be reviewed and collected prior to immunization. Influenza immunizations will be administered by either pharmacists, student pharmacists, or other approved healthcare providers at an independent pharmacy in Wise, VA. After immunization, each patient will complete a set of surveys/questionnaires obtaining information on motivating factors, preferences for future vaccinations, and an open comment section. If a patient is unable to complete a questionnaire, assistance will be provided by a representative in the form of reading or documenting answers.

Effectiveness of flu clinics will be evaluated by completion of questionnaires from participants at locations where this is already standard practice and already provided.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-366

Poster Title: Retrospective evaluation of the use of dulaglutide in an outpatient family practice setting

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Purpose: The purpose of this study is to evaluate the efficacy and tolerability of dulaglutide in Type 2 diabetics within an outpatient family practice setting. The objectives of the study are to determine the percentage of hemoglobin A1c reduction prior to starting dulaglutide compared to every 3, 6, 9, and 12 months following initiation; to evaluate tolerability of dulaglutide, including the rate of discontinuation due to adverse effects; to determine the number of patients who reached their individualized hemoglobin A1c goal on dulaglutide therapy; to determine when in therapy dulaglutide was initiated.

Methods: A retrospective chart review will be conducted at a physician group practice in Winchester, Virginia. A list of patients prescribed dulaglutide before July 1, 2016 will be generated from querying the electronic health record at the practice. The study will include established patients at the practice who are at least 18 years of age, have a diagnosis of Type 2 diabetes, and are currently taking one or more oral diabetes medications. Exclusion criteria include patients who have not been on dulaglutide for greater than 3 months or have not had a 3-month hemoglobin A1c lab value since initiation of dulaglutide therapy. Eligible patients' electronic medical record will be reviewed to collect information regarding demographics, details of diabetes diagnosis and medication therapy, lab values, and documented intolerances or adverse effects from related therapy. This study has been submitted to the institutional review board.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-367

Poster Title: Evaluation of echinocandin use in a community hospital

Primary Author: Briana Ferebee, Bon Secours Memorial Regional Medical Center, VA; **Email:** briana_ferebee@bshsi.org

Additional Author (s):
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Purpose: Echinocandins are frequently used for the treatment of patients with suspected invasive candidiasis. Per Infectious Diseases Society of America guidelines, echinocandins are recommended as first line agents; however, fluconazole is a suitable alternative in patients who are not likely to have Candida resistant to azoles or in patients who are not critically ill. The purpose of this study is to evaluate the appropriateness of echinocandin use at a community hospital and whether prescriber pre-emptive treatment for Candida is warranted.

Methods: This is a retrospective, single center, chart review of patients who were initiated on an echinocandin in a community hospital from January 1, 2016 to June 30, 2016. The primary outcome is the percent of patients initiated on an echinocandin who grew azole-resistant species of Candida. Secondary outcomes include the percent of patients initiated on an echinocandin who grew systemic Candida and the percent of patients initiated on an echinocandin who had risk factors for candidiasis. Data to be collected include: age, gender, risk factors for candidiasis (receiving parental nutrition, recent abdominal surgery, anastomotic leaks, necrotizing pancreatitis, central venous catheter use, high risk comorbidities including renal disease or dialysis, immunosuppression, human immunodeficiency virus, or malignancy), prior exposure to azole antifungals, exposure to broad spectrum antibiotics, or history of resistant fungal infection. Additional data to be collected include culture type, Candida species and susceptibilities, patient location in hospital (ICU versus non-ICU), ordering provider, and whether an infectious disease consult was placed. This study is exempt from the Institutional Review Board as it is a retrospective study evaluating medication use and will only serve for quality improvement measures.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-368

Poster Title: Total body weight dosing versus ideal body weight dosing of intravenous immunoglobulin

Primary Author: Maria Leusink, Bon Secours Memorial Regional Medical Center, VA; **Email:** maria_leusink@bshsi.org

Additional Author (s):
Marshall Pierce

Purpose: The American Academy of Allergy Asthma and Immunology does not have a clear guideline on whether to use ideal body weight (IBW) or total body weight (TBW) with regards to dosing intravenous immunoglobulin. Our institution has recently changed from total body weight based dosing to ideal body weight based dosing. The objective of this medication use evaluation is to identify the impact of the implemented weight based dosing change on patients and pharmacy budget by focusing on clinical responses.

Methods: IRB approval is not necessary for this medication use evaluation. Electronic medical record system will be used to retrieve patients who received intravenous immunoglobulin 9 months before and after the implementation of weight-based dosing change. Microsoft Office Excel will be used for data collection and analysis. All patients will be de-identified and kept confidential as required by HIPAA. Patient demographic information will be collected, such as age, sex, race, height, and weight. For patients who are 60 inches or taller, IBW will be calculated as 50 kg plus (2.3 times height in inches over 60) for males and 45.5 kg plus (2.3 times height in inches over 60) for females. Demographic information will be analyzed using descriptive statistics. Clinical responses will be determined by collecting reported administration frequency, adverse reactions, pre-dose IgG levels, infection rate, and admission rate. These data will be analyzed using t-test and chi-square. Lastly, cost analysis will be conducted to estimate the cost-savings from using IBW dosing.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-369

Poster Title: Arformoterol use as part of an inhaler to nebulizer interchange protocol at a community hospital

Primary Author: Justin Hair, Bon Secours Memorial Regional Medical Center, VA; **Email:** hair.justin@gmail.com

Additional Author (s):
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Purpose: In 2015, arformoterol was added to the Bon Secours St. Mary's Hospital formulary for use in an inhaler to nebulized medication interchange. This interchange specifies that arformoterol is to be used in place of the long acting beta-agonist (LABA) component of inhalers and will be automatically substituted by a pharmacist during order verification. The purpose of this medication use evaluation is to determine if prescribing of arformoterol coincides with the pharmacy and therapeutics (P&T) committee approved use as part of the inhaler to nebulizer interchange.

Methods: Patients who were prescribed arformoterol will be identified for chart review using the electronic health record. The primary endpoint is the percent of arformoterol orders that adhere to the P&T-approved criteria for use. The secondary endpoints are the total number of arformoterol administrations that did not meet P&T approved criteria and the estimated cost savings if nebulized albuterol would have been used in place of arformoterol. The following data will be collected during chart review: patient age, gender, ethnicity, ordering provider, whether a LABA was prescribed prior to admission, indication for LABA, the number of arformoterol doses received, and whether a LABA was continued at discharge. Patients age 18 years and older with orders for arformoterol between May 1, 2016 to August 30, 2016 will be considered for inclusion. Patients will be excluded if arformoterol is discontinued before any doses are given. Data will be de-identified and collected in a password protected Microsoft Excel file. Descriptive statistics will be used to analyze the results of this medication use evaluation. IRB approval is not necessary for this study as it does not constitute human subjects research.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-370

Poster Title: Evaluation of the utilization of opioids, benzodiazepines, and muscle relaxant combination therapy for the geriatric population in the primary care setting

Primary Author: Thu Thuy Tran, Bon Secours Memorial Regional Medical Center, VA; **Email:** thuthuy_tran@bshsi.org

Additional Author (s):
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Purpose: In mid-March, the Centers for Disease Control and Prevention's (CDC) chronic pain management guideline highlighted the need to avoid co-prescribing of opioids, benzodiazepines, and muscle relaxants whenever possible. Patients on this combination therapy are at an increased risk for adverse drug events such as central nervous system depression, over-sedation, falls, opioid-induced constipation, and fatal respiratory depression. This study aims to evaluate how the concurrent utilization of these classes affects the geriatric patients, the incidence of subsequent adverse events, and whether primary care providers are implementing the CDC's guideline into practice.

Methods: This retrospective chart review will examine all patients greater or equal to 65 years of age, within the Bon Secours Medical Group (BSMG) practices, who are prescribed an opioid, benzodiazepine, and/or muscle relaxant, from April 1st to August 31, 2016, for the presence of adverse event documentation. The targeted adverse events will be reports of falls, orthostatic hypotension, complaints of gastrointestinal discomfort requiring medication management, and emergency department visit or hospitalization. Three BSMG practice sites will be included in this study, Laburnum Medical Center, Patterson Avenue Family Practice, and Memorial Medical Center. The following data queries will be collected: patient's age, gender, practice site, blood pressure readings, related medication name(s), recent addition of gastrointestinal agents for medication- induced constipation, and number of hospitalization or emergency room visits. The data will be de-identified and stored in a password-protected, network shared drive. The investigators will evaluate if an adverse event occurred after the initiation of the targeted pharmacological class combination therapy.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-371

Poster Title: Retrospective analysis of unfractionated heparin use in patients with percutaneous ventricular assist devices

Primary Author: Jenna Dietrich, Carilion Roanoke Memorial Hospital, VA; **Email:** jenna.n.dietrich@gmail.com

Additional Author (s):
Hasan Kazmi

Purpose: Impella pumps are percutaneous left ventricular assist devices used for cardiogenic shock and ST-elevation myocardial infarction. These devices require heparinized purge solution to prevent pump thrombosis. The Impella manufacturer now recommends using a less viscous, 5% dextrose solution as the diluent instead of 20% dextrose, which may result in higher purge flow rates, infusion volumes, and heparin exposure. This may place patients, especially those with low body weight, at increased risk of bleeding events. Additionally, increased heparin exposure may necessitate decreasing the heparin concentration in the purge solution. Using multiple concentrations of a high-risk medication may introduce potential medication errors.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a single center retrospective cohort analysis of patients on Impella pumps who received heparinized purge solution from January 2014 through September 2016. Exclusion criteria include patients who had the Impella discontinued prior to obtaining an activated partial thromboplastin time (aPTT) and patients receiving a direct thrombin inhibitor. The primary outcome will evaluate the number of patients with at least one supratherapeutic aPTT while receiving purge solution without systemic heparin. Secondary outcomes include the number of heparin concentration changes needed, as well as bleeding events and thrombotic events. Bleeding will be assessed based on the Bleeding Academic Research Consortium (BARC) definitions. Data collection points will include demographic information (age, weight, height and gender), past medical history, duration of Impella support, total number of heparin concentration changes in the purge solution, concentration of dextrose in the purge solution, rate of heparinized purge solution, rate of intravenous heparin, laboratory data (aPTT and hemoglobin), and adverse events (bleeding and thrombotic events).

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-372

Poster Title: Evaluation of appropriate total parenteral nutrition (TPN) use in the pediatric population

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Purpose: Total parenteral nutrition (TPN) is initiated in pediatric patients who are unable to tolerate enteral feeds for a period of time or in anticipation of a lack of enteral feeding in the future due to bowel dysfunction. Many factors determine the appropriate use and continuation of TPN in pediatric patients, including indication, patient characteristics, and feeding status. TPN use may result in complications including cholestasis, electrolyte imbalances, and infection. The main goal of this investigation is to evaluate the appropriate use of pediatric TPN before and after implementation of a new pediatric TPN guideline in January 2015.

Methods: This medication use evaluation is a retrospective analysis of TPN data collected from the electronic medical record at Carilion Roanoke Memorial Hospital (CRMH). Information will be reviewed for pediatric patients from birth to 18 years old who received TPN from July 2013 to July 2016. Indication for use, patient characteristics, prescribing methods of TPN, and any complications will be collected. Specifically, the TPN order will be evaluated for appropriateness. Determination of the appropriate use will be based on ASPEN guidelines for pediatric TPN. The impact of the CRMH pediatric TPN guideline will also be evaluated. Descriptive statistics will be used to evaluate this data. All data will be recorded without patient identifiers.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-373

Poster Title: Evaluation of antihypertensive medication use for patients requiring hemodialysis

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Additional Author (s):
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Purpose: The most common cause of adverse events related to hemodialysis is medication errors, with medication dose omissions being the most frequently reported. Missed doses may occur at various times throughout a patient's hemodialysis therapy. Since hypertension affects approximately 86% of patients requiring hemodialysis, it's imperative that optimal hypertensive treatment is provided for this population. Since most antihypertensive medications are dosed once daily, inappropriately holding medications in preparation for hemodialysis can prevent the patients from receiving their daily treatments. The main goal of this investigation is to evaluate antihypertensive medication use for patients requiring hemodialysis in a large community teaching hospital.

Methods: This is a retrospective medication use evaluation of information documented in the electronic medical record of a large community teaching hospital. Medical information will be evaluated for patients 18 years of age and older who have received hemodialysis. After the list of hemodialysis patients is generated, patient data from twenty-five random patients per month spanning January 1, 2016 to July 31, 2016 with a diagnosis of hypertension will be analyzed. Data to be collected includes: patient baseline demographics, antihypertensive medications prescribed, information related to the dialysis session, if the medications were held and reasons why, blood pressure measurements, and if the patient needed a rescue antihypertensive medication. The information that will be evaluated will reveal antihypertensive medication use in hemodialysis patients, and the outcomes will then be assessed to determine whether the antihypertensive medication was held with or without a physician's order.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-374

Poster Title: Evaluation of held scheduled insulin orders for appropriateness at a community teaching hospital

Primary Author: Clare McMahon, Carilion Roanoke Memorial Hospital, VA; **Email:** cpmcmahon@carilionclinic.org

Additional Author (s):
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Purpose: Currently, patients with diabetes consist of 25-30% of adult hospitalized patients. When patients with diabetes are admitted to the hospital, glycemic control is crucial to their care. Various consequences of uncontrolled blood glucose include: hyperosmolar hyperglycemic state (HHS), diabetic ketoacidosis (DKA), impaired wound healing, end organ damage, and prolonged length of stay. By evaluating appropriateness of held scheduled insulin orders, this medication use evaluation can identify patterns and health consequences of inappropriately held insulin. In addition, this data will provide information for development of nursing education and optimization of medication administration record (MAR) documentation by nursing.

Methods: This medication use evaluation is a retrospective analysis of information documented in the electronic medical record at a large community teaching hospital. Medical information will be reviewed for patients who are 18 years of age and older with an order for scheduled subcutaneous insulin detemir, insulin aspart, insulin aspart protamine 70%/insulin aspart 30%, and neutral protamine Hagedorn (NPH) insulin between January 1, 2016 and February 1, 2016. Evaluated data will include baseline characteristics, held insulin order information, and clinical outcomes. Specific clinical assessment will include rebound hyperglycemia, anion gap reopening, and initiation of continuous insulin infusion. Held insulin is considered appropriate if there is documentation of communication between nurse and provider.
Descriptive statistics will be used to describe the cohort of patients. Patient variables will be compared using Student's t-test or Mann-Whitney U test for continuous variables. Fisher's

exact test or Chi-Square will be used for categorical variables. Continuous data will be described using mean plus standard deviation or median (interquartile range, IQR) depending on the distribution of the data. All data will be recorded without patient identifiers. The institutional review board (IRB) categorized this review as a quality assurance/quality improvement activity exempt from IRB oversight.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-375

Poster Title: Fidaxomicin as a first-line agent in the treatment of Clostridium difficile infection: a cost/benefit analysis

Primary Author: Angela Perhac, Carilion Roanoke Memorial Hospital, VA; **Email:** perhac@goldmail.etsu.edu

Additional Author (s):
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Purpose: Clostridium difficile (C. diff) is the leading cause of infectious diarrhea in hospitals. Even with proper treatment, 20-30% of people have recurrent episodes. Fidaxomicin has been shown to reduce recurrence rates of infection, while providing similar efficacy to the current standard of care: oral vancomycin. Many institutions have not utilized fidaxomicin in treatment protocols due to increased cost of this medication compared to other options. The objective of this MUE is to determine whether the cost of using fidaxomicin first-line for treatment of initial or first recurrence of C. diff can be justified by reducing recurrence and admission rates.

Methods: This study will be a single-center, retrospective, descriptive analysis. Patients 18 years and older with a positive C. diff test admitted from September 2015 to September 2016 will be included. A positive C. diff test will be determined using our 2-step antigen and toxin test, with reflex PCR. The cost-effectiveness will be assessed using the cost of a 10 day course of fidaxomicin versus oral vancomycin or metronidazole and readmission costs for recurrent C. diff infection. We will estimate the reduction in readmissions based on reductions seen in previous literature and estimate cost savings based on the readmission costs for Carilion Roanoke Memorial Hospital. The data collected from patient's charts will be as follows: age, sex, unit, prior antibiotics (dates used), length of stay, C. diff test results and dates (GDH antigen and toxin – PCR, if applicable), C. diff treatment (drug and dates), number of C. diff recurrences, degree of infection (mild, moderate, severe), concomitant systemic antibiotics, mortality (if applicable).

Results: In progress.

Conclusion: In progress.

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 9-376

Poster Title: Vancomycin dosing in obese patients: effect of a BMI specific volume of distribution on serum levels

Primary Author: Shehrin Chowdhury, Centra Lynchburg General Hospital, VA; **Email:** shehrin.chowdhury@centrahealth.com

Additional Author (s):

Purpose: Vancomycin is one of the mainstay antibiotics used for a variety of systemic gram positive infections, particularly Methicillin-Resistant Staph. aureus. Available literature has analyzed use of adjusted body weight, decreased volume of distribution, and other pharmacokinetic parameter changes in obese patients, to achieve goal trough levels in the 10 to 20mg/L range. However, there is still no consensus on the most effective dosing strategy in obese patients. The purpose of this study is to observe the effect on initial trough levels using a BMI specific volume of distribution as compared to traditional methods for vancomycin dosing in obese patients.

Methods: The study was submitted and approved by the Institutional Review Board. Data collected during implementation of the new protocol will be between October 2016 to January 2017 and compared to retrospective data within the institution. Subject characteristics include intravenous vancomycin therapy for at least 4 to 5 half lives, age greater than or equal to 18 years, body mass index (BMI) greater than or equal to 30 kilogram/meters squared, and creatinine clearance greater than 30ml/min (using Cockroft-Gault). For the new protocol, a volume of distribution of 0.7L/kg will be used for BMI 30 to 39 kilogram/meters squared, and 0.5L/kg will be used for BMI greater than or equal to 40 kilogram/meters squared, calculated using patients total body weight. Attainment of initial trough levels within target range of 10 to 20 mg/L at steady state will then be assessed. Subsequently, the frequency of trough levels that are within range (10 to 20 mg/L), below range (less than 10 mg/L) and above range (greater than 20 mg/L) will be collected and analyzed. Incidence of nephrotoxicity, defined as a serum creatinine increase of 50 percent or greater from baseline, will also be assessed.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-377

Poster Title: Evaluation of tolvaptan use in a four-hospital health-system

Primary Author: Jordan Cooler, Centra- Lynchburg General Hospital, VA; **Email:** jordan.cooler@centrahealth.com

Additional Author (s):

Purpose: Hyponatremia, defined as plasma sodium concentrations of less than 135 mEq/L, is considered the most common electrolyte disturbance in hospitalized patients. It can be further categorized as hypovolemic, hypervolemic, or euvolemic hyponatremia. Tolvaptan is a vasopressin antagonist approved to treat hypervolemic or euvolemic hyponatremia defined as plasma sodium less than 125 mEq/L or as plasma sodium 125-135 mEq/L with symptoms that is unresponsive to fluid restriction. Concern for safe and appropriate management of hyponatremia prompted review of tolvaptan use within Centra Health. Therefore the purpose of this retrospective review was to assess appropriate utilization of tolvaptan in treating hyponatremia.

Methods: All patients who received at least one dose of tolvaptan at any of the four Centra Health inpatient hospitals between September 2014 and September 2016 were included and assessed. Initial review began with collection of patient specific demographics. In order to evaluate that tolvaptan was used in the correct patient population, information regarding patient demographics, laboratory values such as serum sodium concentration, relevant past medical histories, and diagnoses documented by physicians were evaluated. To assess management of hyponatremia at different severity levels, data related to therapies utilized prior to tolvaptan was documented. Tolerability of tolvaptan was measured through physician documentation and pertinent lab values. Based on patient specific data points collected during chart review, determination of appropriate use of tolvaptan was documented in a binary fashion (appropriate or inappropriate).

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 9-378

Poster Title: Impact of therapeutic interventions on thrombocytopenia in patients on histamine-2 receptor antagonists

Primary Author: Sarah Ibinson, CJW Medical Center, VA; **Email:** krusesa@vcu.edu

Additional Author (s):
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Purpose: Although drug-induced thrombocytopenia due to a histamine-2 receptor antagonist (H2RA) is reported as a rare occurrence, H2RA's are often discontinued or substituted for a proton-pump inhibitor (PPI) if a patient develops moderate to severe thrombocytopenia. This study looked to evaluate if there is a difference in outcomes for patients who remain on an H2RA, are switched to a PPI, or who have their H2RA discontinued without a replacement acid suppressant after they experience a clinically significant drop in their platelet count.

Methods: In this retrospective cohort study, the primary endpoint was to determine whether the different interventions resulted in a recovery of platelets. The secondary endpoints were to evaluate if patients had an accepted indication, received testing for heparin-induced thrombocytopenia, and the incidence of pneumonia and Clostridium difficile infections (CDI's). Adults who received an H2RA for at least 24 hours while admitted for at least 72 hours, and experienced a 25% or greater drop in their platelet count resulting in a count of less than 100,000/mm3 were included in this study. Patients were excluded if thrombocytopenia occurred while receiving CRRT or within 48 hours of having surgery, received both an H2RA and PPI concomitantly, had certain conditions known to cause thrombocytopenia, had chemotherapy within 21 days, or were pregnant.

Results: All but one of the eight patients meeting study criteria saw an increase in their platelet count once an intervention was made. One patient continued on an H2RA and had their platelet count recover, five patients were continued on an H2RA and did not have their platelet count recover, one patient was changed to a PPI and had their platelet count recover, and one patient was changed to a PPI and did not have their platelet count recover. Patients who were

continued on an H2RA had lower average baseline, nadir, and final platelet counts compared to patients who were switched to a PPI. Three patients received heparin products; however none received testing for heparin-induced thrombocytopenia. One patient was on therapy for GERD, while the others were on stress ulcer prophylaxis. None of the eight patients developed pneumonia or CDI's.

Conclusion: It may be beneficial to discontinue or replace an H2RA in patients that experience an unexplainable, significant platelet drop. If the patient's platelet count does not recover in response to discontinuing or replacing the H2RA with a PPI, it may similarly be beneficial to re-challenge the patient with an H2RA in order to maintain them on stress ulcer prophylaxis and to limit their potential for developing pneumonia or CDI's.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-379

Poster Title: Evaluation of benzodiazepine and/or non-benzodiazepine receptor agonist administration on fall rates in a community medical center

Primary Author: Elizabeth Taber, CJW Medical Center, VA; **Email:** elizabeth.taber2@hcahealthcare.com

Additional Author (s):
Torill Yamarik
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Purpose: Medications with central nervous system (CNS) effects are ten times more likely to cause an inpatient fall. Data suggest anxiolytics and sedative-hypnotic medications are inappropriately prescribed for geriatric patients. The purpose of the study investigate whether the administration of benzodiazepines or non-benzodiazepine receptor agonists, such as zolpidem, attributed to a fall in the hospital setting and if appropriate geriatric dosing was utilized in this population. Secondarily, the occurrence of polypharmacy will be evaluated.

Methods: This retrospective cohort study has approval from the Institutional Review Board. The study population will include patients 65 years of age and older who have a recorded fall at CJW Medical Center between June 1, 2015, and May 31st, 2016. Patients will be excluded if they were admitted due to an outpatient fall, experienced the fall on an intensive care unit, received Clinical Institute Withdrawal Assessment medications, received palliative care protocol medications, admitted for less than 48 hours, and/or had documented orthostatic hypotension. The quality assurance team will generate a list of patients with documented falls and it will be randomly assorted and evaluated until 200 patients are enrolled or the list of eligible patients has been exhausted. The following data will be collected from patient profiles and administration reports: time of the fall, time of administration of a benzodiazepine or non-benzodiazepine receptor agonist, specific medication, dosing, and polypharmacy, defined as receiving at least one dose of both investigated medication classes within a 48 hour time frame.

Results: Not available

Conclusion: Not available

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-380

Poster Title: Evaluation of initial dofetilide dosing for patients with risk for QT interval prolongation

Primary Author: Johanna Behrens, CJW Medical Center, VA; **Email:** behrensje@vcu.edu

Additional Author (s):
Timothy McLlarky

Purpose: Dofetilide is known to prolong the corrected QT interval (QTc) which is associated with ventricular arrhythmias. Current dofetilide labeling recommends utilizing renal dose adjustments to reduce the risk of QTc prolongation, but does not consider other risk factors such as gender or age. The objective of this study is to investigate whether an initial empiric dose reduction of dofetilide in patients with risk factors for dofetilide induced QTc prolongation is associated with a reduced need for further dose reductions without reducing efficacy.

Methods: This retrospective cohort study has been submitted and approved by the Institutional Review Board. The data mining function of a clinical support software program will be used to generate a report of eligible patients who are >18 years old and who were newly initiated on dofetilide during an in-patient admission between August 1, 2014 and July 31, 2016. All data will be collected retrospectively by reviewing the electronic medical record. Protected health information and patient identifiers will be maintained throughout the study using a password protected database.
Patients will be categorized into two groups: (i) the reduced dose group if the initial dose of dofetilide was lower than the recommended starting dose based on creatinine clearance and (ii) the standard dose group if the initial dose was the same as the recommended dose for the creatinine clearance. The primary endpoint is a composite of dofetilide dose reduction, discontinuation of therapy due to prolongation of the QTc, or discontinuation due to lack of efficacy during the first three days of dofetilide therapy. The secondary endpoints include the individual components of the composite primary endpoint, the peak QTc during the first 3 days of therapy, absolute change in QTc from baseline to peak, and time from dofetilide initiation to discharge.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 9-382

Poster Title: Efficacy of liposomal bupivacaine to improve outcomes in breast reconstruction

Primary Author: Zachary McConnell, Henrico Doctors' Hospital, VA; **Email:** zachary.mcconnell@hcahealthcare.com

Additional Author (s):
Celene Amabile

Purpose: Breast reconstruction surgery leads to severe post-operative pain in a substantial number of patients. It can be relatively challenging to adequately manage this type of post-operative pain due to its complex nature. The oncoplastic breast reconstruction best practice guidelines recommend a multimodal approach to successfully managing patients, which may include patient-controlled analgesia, opioids, non-opioid analgesics, local nerve blockade, and local anesthetic infiltration. This study was designed to determine the efficacy of liposomal bupivacaine in reducing post-surgical pain scores and opioid use in patients undergoing breast reconstruction surgery, with other notable endpoints including length of stay and post-operative anti-emetic use.

Methods: A retrospective chart review of patients undergoing breast reconstruction surgery will be performed. The following will be collected from each patient chart: age, weight, baseline serum creatinine, creatinine clearance, allergies, type of surgical procedure, date and time of surgery, date and time of discharge, pain scores, analgesic usage, anti-emetics usage, antispasmodic usage, and any complications that may occur. Inclusion criteria require patients to have undergone breast reconstruction with tissue expanders between the dates of January 1, 2015 and August 15, 2016. Patients will be excluded for chronic pain conditions defined by a pertinent diagnosis in the patient chart or chronic analgesic use, uncontrolled pain at the time of the surgery defined as the need for analgesics unrelated to the procedure prior to surgery, or if a flap-based reconstruction is performed. All opioid doses will be converted to morphine equivalents. Total length of hospital stay will be calculated. All patient information will be de-identified and analyzed in aggregate to protect the patients' right to privacy. This study has been exempted from requirement of Investigational Review Board approval by the Research Review Committee.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-383

Poster Title: Medication use evaluation of tolvaptan in a community hospital setting

Primary Author: Ashley-Nicole Carmichael, Inova Alexandria Hospital, VA; **Email:** ashley-nicole.carmichael@inova.org

Additional Author (s):
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Purpose: Tolvaptan (Samsca)® is a selective V2-receptor antagonist currently FDA approved for the treatment of clinically significant hypervolemic and euvolemic hyponatremia, including patients with heart failure and Syndrome of Inappropriate Antidiuretic Hormone (SIADH). At this hospital, tolvaptan has specific criteria and limitations for use. Recently, our hospital has seen a substantial increase in the cost of tolvaptan usage in the pharmacy over the past year. The purpose of this evaluation is to determine the impact of these criteria on the utilization of tolvaptan, evaluate potential changes to the criteria and project associated cost impacts.

Methods: All patients from September 2015 to present who received tolvaptan will be included in this medication use evaluation by utilizing a retrospective chart review design. The electronic medical record will be accessed and reviewed to collect the following information: age, date of admission, principal diagnosis, basic metabolic panel results, volume status, diuretic medication administration, fluid restriction status, interacting medications and neurologic conditions. Information including tolvaptan dose, indication for use, prescribing doctor, number of doses, adherence to hospital-approved criteria for use, as well as serum sodium values and trends will also be collected. Lastly, length of stay and overall mortality will be assessed.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-384

Poster Title: Medication use evaluation of nicardipine in the setting of acute ischemic stroke treated with alteplase.

Primary Author: Cindy Esterline, Inova Alexandria Hospital, VA; **Email:** cynthia.esterline@inova.org

Additional Author (s):
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Purpose: Nicardipine is an intravenous dihydropyridine calcium channel blocker with FDA approval for the treatment of acute hypertension. Nicardipine produces relaxation of coronary vascular smooth muscle and coronary vasodilation. In the setting of acute ischemic stroke (AIS), AHA/ASA recommends nicardipine or labetalol to be used for the management of hypertension. The purpose of this evaluation is to determine the current use of nicardipine at Inova Alexandria Hospital (IAH) and in turn provide guidance for the future use of nicardipine in the management of blood pressure following AIS treated with alteplase.

Methods: All patients from January 23, 2016 to August 10, 2016 who received alteplase for the treatment of AIS will be included in this medication use evaluation through retrospective chart reviews. The electronic medical record will be accessed and reviewed to collect the following information: age, gender, allergies, home medications, blood pressure readings prior to and 24 hours after receiving alteplase as well as door to needle time. Information regarding medications utilized for blood pressure management will include antihypertensive agent name, dose, timing and titration as applicable.

Results: Research in Progress

Conclusion: Research in Progress

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 9-385

Poster Title: Antihypertensives via intermittent bolus versus continuous infusion for the management of hypertensive emergency in the emergency department

Primary Author: Lindsay Waddington, Inova Fairfax Hospital, VA; **Email:** lindsay.waddington@inova.org

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Mona Shah

Purpose: Hypertensive emergency requires an immediate reduction in blood pressure (BP) with intravenous antihypertensives to prevent further end organ damage. Available guidelines (JNC7 and ESH/ESC) establish blood pressure goals, but do not have specific recommendations for a preferred agent in the absence of additional emergent complications. In the emergency department at Inova Fairfax Hospital there is no standard approach to treatment of hypertensive emergency when evaluating agent used or type of administration (e.g. bolus dosing versus continuous infusion). The study objective is to compare intermittent bolus dosing of antihypertensives versus continuous infusion to achieve the treatment goals established by JNC7.

Methods: A single center, retrospective chart review from January 2015 to June 2016 will be conducted in patients who are prescribed intravenous (IV) antihypertensives (labetalol, nicardipine, hydralazine, or enalaprilat) in the emergency department at Inova Fairfax Hospital. Patients 18 years or older with hypertensive emergency will be included if they received at least one dose of an IV antihypertensive. Patients with stroke, myocardial infarction, unstable angina, heart failure, dissecting aortic aneurysm or pregnancy will be excluded. Patients who transferred with treatment already in progress or did not remain in the ED for at least 1 hour after medication administration will also be excluded. The primary outcome is difference in achieving a 20-25 percent reduction in mean arterial pressure 1 hour after the initial antihypertensive medication was administered. Secondary outcomes include achieving a blood pressure of less than 160/110mmHg at 2 to 6 hours, frequency of hypotension (less than 90/60mmHg) or bradycardia (less than 60bpm), and return of elevated blood pressure after meeting the 1 hour or 2 to 6 hour goal. For patients who meet criteria we will collect demographic information (age, gender, home antihypertensives), serial blood pressures, serial

heart rates, medications administered, time of administration, and concomitant medications that may influence blood pressure. If available we will also collect serum creatinine, urinary analysis, and physical exam findings associated with end organ damage as needed.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-386

Poster Title: Evaluating the outcomes of obese patients undergoing induction chemotherapy for acute leukemia.

Primary Author: Lauren Dombrowski, Inova Fairfax Hospital, VA; **Email:** lauren.dombrowski@inova.org

Additional Author (s):
Leila Mohassel

Purpose: Obesity continues to be a growing epidemic in the United States. Guidelines published by ASCO in 2012 recommend dosing chemotherapy using actual body weight, including in obese patients. However, the guidelines do not specially mention this dosing strategy for hematologic malignancies and no studies referenced for the guidelines were hematologic-based. The objective of this study is to evaluate outcomes in obese patients undergoing induction chemotherapy for acute leukemia versus non-obese patients using actual body weight.

Methods: The study is currently under Institutional Review Board for approval. This will be a single-center, retrospective analysis from November 9, 2012 to August 31, 2016. Patients will be identified from an electronic medical record with a diagnosis of acute leukemia. Patients included will be 18 years of age or older with newly diagnosed acute leukemia who received and completed induction chemotherapy at Inova Fairfax Medical Center (IFMC). All data will de-identified to maintain confidentiality. The primary outcome is complete remission (CR) rates after induction therapy. Secondary outcomes include: time to ANC and platelet recovery, incidence of febrile neutropenia, clinical or microbiological infections, overall survival at 6 months, early (0-15 days) and in-hospital mortality. Data points collected will include sex, age, weight, height, BMI/BSA, co-morbidities, baseline laboratory values, type of leukemia, cytogenetics/molecular abnormalities, % blasts at baseline, day 14, and at time of recovery, type of infection if documented, length of hospitalization, and cause of death. Comparison of groups will be looking at statistical and clinical differences in primary and secondary outcomes between obese patients and non-obese patients using descriptive statistics, chi squared or Fisher's Exact Test, and Student's t-test.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 9-387

Poster Title: Direct oral anticoagulants for the treatment of venous thromboembolism in cancer patients

Primary Author: Kimberly Sorensen, Inova Fairfax Hospital, VA; **Email:** kimberly.sorensen4@gmail.com

Additional Author (s):
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Jenny Kim

Purpose: Cancer patients are more likely to develop venous thromboembolism (VTE) compared to non-cancer patients. The recommended treatment for cancer-associated thrombosis is low molecular weight heparin (LMWH) therapy. However, the high cost associated with this treatment and the need for daily injections are major barriers to its use in clinical practice. A Meta-Analysis suggests that direct oral anticoagulants (DOACs) are as effective as vitamin K antagonists in cancer patients. Although these findings are encouraging, further data in patients with active cancer is warranted. The objective of this study is to assess the safety and effectiveness of DOACs in cancer-associated thrombosis.

Methods: This study has been submitted to the Institutional Review Board for approval. It is a single-center, retrospective analysis from November 9, 2012 to July 31, 2016. Adult cancer patients with active disease receiving DOAC therapy will be identified using an electronic medical record system and included in the study. Patients initiated on DOAC therapy for VTE treatment more than six months prior to cancer diagnosis or once in remission will be excluded. The primary outcome measure is incidence of recurrent VTE by diagnostic imaging. Secondary outcomes include rate and severity of bleeding, time to bleed, and time to recurrent VTE. Data collected will include: age, race, sex, weight, height, past medical history, type of VTE (deep vein thrombosis, pulmonary embolism, or both), type of recurrent VTE, cancer diagnosis and stage, cancer treatment, relevant drug-drug interactions, type and dose of DOAC (rivaroxaban, dabigatran, or apixaban), and type of bleed (major or clinically relevant nonmajor) and location. Descriptive statistics will be used to analyze the final results.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-388

Poster Title: Management of new onset atrial fibrillation during sepsis in critically ill patients

Primary Author: Christine Brun, Inova Fairfax Hospital, VA; **Email:** christine.brun@inova.org

Additional Author (s):
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David Allen

Purpose: Studies have shown that 6 to 20 percent of severe sepsis patients develop new-onset atrial fibrillation (AF). New-onset AF is associated with increased ICU and hospital length of stay, increased stroke risk, heart failure, and increased mortality. The 2014 AHA/ACC/HRS guidelines recommend the use of intravenous beta-blockers or non-dihydropyridine calcium channel blockers to slow the ventricular rate in the acute setting. There is limited literature to guide the treatment of new-onset atrial fibrillation in sepsis patients. The goal of this study is to determine what medications are most effective for the management of new onset AF in septic patients.

Methods: This single center, retrospective chart review received IRB approval. Subjects will be identified by medication and diagnosis codes, and separated into three groups: calcium channel blockers and beta blockers, digoxin, amiodarone. Electronic health records will be reviewed for inclusion criteria: at least 18 years old, admitted to non-cardiovascular ICU from November 2012 to July 2016, diagnosis of sepsis or septic shock and development of new-onset AF during hospital admission. Patients will be excluded if they are pregnant, have known history of atrial fibrillation (AF), or underwent electrical cardioversion before receiving study medications. Data to be collected includes: age, sex, date of ICU admission, date of transfer from ICU, medical and medication history, diagnosis, BP and HR, and use of vasopressors. Time of AF onset will be recorded, along with medication, dose, and administration time. Investigators will record the occurrence of rate (HR less than 100 but greater than or equal to 60) and/or rhythm control (documented sinus rhythm) for each medication. Investigators will evaluate subjects for 24 hours after first drug administered. Presence of hypotension (BP less than 90/60 mmHg) and bradycardia (HR less than 60 bpm) in these 24 hours will be recorded, along with HR at time of rate and/or rhythm control. Comparisons will be made between the 3 medication groups to determine effective management of new onset AF in septic patients.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-389

Poster Title: Evaluating the use of antibiotics and infectious complications in neonates with gastroschisis

Primary Author: Amy Olander, Inova Fairfax Medical Campus, VA; **Email:** olander.12@osu.edu

Additional Author (s):
Van Tran

Purpose: Gastroschisis is a congenital defect in which the intestines protrude through an opening in the abdominal wall. Studies have shown high rates of infectious complications and the importance of prophylactic antibiotics in patients in the NICU born with gastroschisis. Currently, there are no evidence based guidelines for the management of antibiotics in gastroschisis patients. The purpose of this study is to characterize current antibiotic management of patients with simple and complex gastroschisis by assessing infectious complications.

Methods: This study has been submitted to the Institutional Review Board and is currently under review. This is a single-center, retrospective chart review of a 108 bed, level IV Neonatal Intensive Care Unit (NICU). Patients were included if they were born with gastroschisis and admitted to the NICU. Subjects will be identified using ICD-9 and ICD-10 codes. Pertinent information to assess primary and secondary outcomes will be obtained by reviewing the eligible patients' electronic medical record. The following data will be collected: patient gestational age, gender, birth weight, comorbidities, surgical intervention, gastroschisis type, infectious complications, antibiotics, duration of antibiotics, neonatal death, length of hospital stay, and nothing by mouth (NPO) status, and maternal age, race, antibiotics received during delivery, and delivery method. Collected patient data will be de-identified and data collection spread sheets will be password protected. The incidence of infectious complications will be reported as a percentage of patients who were positive for infection. Initial choice of antibiotics, subsequent de-escalation or escalation of antibiotics, and organisms that were isolated in positive cultures will also be recorded. Descriptive statistics will be used to report the total duration of antibiotics, duration of antibiotics post-surgical closure, time to surgical closure from birth, length of hospital stay, NPO status and neonatal death.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 9-390

Poster Title: Assessing the use of hydromorphone in an emergency department at a community hospital

Primary Author: Kathryn Muha, Inova Mount Vernon Hospital, VA; **Email:** kathryn.muha@inova.org

Additional Author (s):
Kristin Marge

Purpose: Pharmacists are identified by The Comprehensive Addiction and Recovery Act of 2016 as critical team members in tackling the rising problem of opioid abuse. According to the Institution for Medication Safety's Health's National Prescription Audit Plus Retail database, the number of prescriptions legally dispensed for hydromorphone has increased from 2.6 million in 2009 to 3.8 million in 2014, which is a 44.9 percent increase. The objective of this medication use evaluation is to analyze the use of opioid analgesics, specifically morphine and hydromorphone, in the emergency department of a community hospital and determine opportunities to improve practice.

Methods: A retrospective chart review was performed analyzing data from the emergency department at a community hospital for the time period January 1, 2016 through July 31, 2016. The primary endpoint evaluated was monthly morphine and hydromorphone usage in mg per 1,000 patient visits. Data collected included: drug administered, date and time of ordering, date and time of administration, dose of drug, route of drug (intravenous, intramuscular and oral), frequency of administration, patient name, patient sex, patient weight, patient allergies, and diagnosis code(s). A subset of the patients who received hydromorphone 2 mg intravenous or intramuscular were analyzed to determine if patients were opioid tolerant prior to arrival in the emergency department. A subset of the patients who received hydromorphone due to an allergy to morphine were analyzed to determine the patient-specific reaction to morphine. This medication use evaluation will be conducted as a part of the pharmacy department quality assurance program and as such does not require Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-391

Poster Title: Evaluation of darbepoetin alfa usage in a community hospital setting

Primary Author: Marilyn Hill, Inova Mount Vernon Hospital, VA; **Email:** marilyn.hill@inova.org

Additional Author (s):
Kristin Marge

Purpose: Darbepoetin alfa is an erythropoiesis-stimulating protein indicated for anemia due to chronic kidney disease (CKD) and anemia secondary to chemotherapy. To promote safe and cost-effective usage, our hospital system has restriction criteria based on indication and an electronic order set to guide appropriate dosing and monitoring. The purpose of this evaluation is to determine the effectiveness of the current order set in guiding safe, appropriate, and cost-effective therapy for both new starts and continuation of therapy; and to identify opportunities for improvement.

Methods: A retrospective electronic chart review will be performed for a sample of inpatient adults who received darbepoetin alfa from January 1, 2016 to June 30, 2016. The primary outcome to be assessed is appropriateness of the darbepoetin alfa regimen for orders placed using the electronic order set compared to orders not placed utilizing the order set. Patients will be identified as either new starts or continuation of therapy. New starts will be evaluated for appropriateness based on indication and initial weight-based dosing. Darbepoetin alfa maintenance regimens will be assessed for appropriateness of ongoing dose adjustments. Deviations from order set recommended dosing will be evaluated to determine potential for cost savings. This site-approved medication use evaluation is to be used as part of the pharmacy department's quality assurance program and presented to local pharmacy and therapeutics committee. IRB approval is not required for this study.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 9-392

Poster Title: Comparison between the old and new CIWA-Ar Protocols on the effect of ICU length of stay in alcoholic withdrawal patients in the ICU

Primary Author: Esther Lee, Reston Hospital Center, VA; **Email:** leeec@vcu.edu

Additional Author (s):
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Arthur Harralson

Purpose: CIWA-Ar score helps stratify severity of alcohol withdrawal syndromes, guides treatment, and the decision to transfer to the ICU. The hospital will implement a new CIWA-Ar-based alcohol-withdrawal protocol for the ICU in October 2016. This retrospective observational study aims to determine the efficacy and safety of the new protocol compared to the old protocol in patients presenting with alcohol withdrawal syndrome. The primary objective is to compare the average length of stay in the ICU. The secondary endpoint is to evaluate whether there is a decrease in the average number of ventilator days for patients that have been vented.

Methods: The ICU admission for patients diagnosed with alcohol withdrawal syndrome or related diagnosis or those with a CIWA-Ar >20 will be reviewed through their electronic health records identifying these patients using the appropriate ICD-10 codes during the study periods of November 2015 to February 2016 (old protocol) and November 2016 to February 2017 (post new protocol). Alcoholic withdrawal patients in the ICU will be included if they are ≥18 years of age, had the alcohol withdrawal protocol followed during the ICU admission, and assessed for a CIWA score documented in the electronic medical record. Patients will be excluded if they are on the general medical floor, patients that have been in the ICU < 12 hours, have a primary diagnosis other than alcohol withdrawal, and pregnant. The primary and secondary outcome will compare the old and new protocol and be measured by the average number of days for the following data that will be collected: ICU length of stay and the number of ventilator days. Additional information that will be gathered will be the number of specific medications used between the old and new protocol. Length of stay and ventilators days will be compared with the t-test if normally distributed or Mann-Whitney if not normally distributed. This

retrospective case-control study will be submitted to the Institutional Review Board for approval.

Results: N/A (In progress)

Conclusion: N/A (In progress)

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-393

Poster Title: Standardized counseling of medications' side effects and improvement of hospital consumer assessment of healthcare providers and systems (HCAHPS) scores in a community hospital.

Primary Author: Elmira Darvish, Reston Hospital Center, VA; **Email:** edarvish12@su.edu

Additional Author (s):
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Purpose: HCAHPS scores provide a standardized measurement of consumer satisfaction and allow for an objective comparison between hospitals' quality of care. This randomized telephone questionnaire evaluates various aspects of patient care including medication communication. This includes how often hospital staff describe possible side effects in a manner that is understood by the patients and their respective families. This study aims to evaluate the effect of a standardized patient counseling approach on the HCAHPS scores at Reston Hospital Center.

Methods: This prospective quality improvement study will require collaboration between the pharmacy and nursing departments. Patients who are starting a new medication on the surgical floor will be identified on a daily basis using the hospital's electronic health record system. A standardized medication-counseling sheet will be prepared for each patient and a pharmacy or nursing staff member will directly counsel the patient. Furthermore, a teach-back method will be applied to validate a patient's understanding of a medication's side effects. After being discharged, patients will randomly receive a telephone questionnaire from a third-party for the assessment of HCAHPS scores in multiple categories including medication communication. The primary outcome of this study is improvement in the HCAHPS scores regarding the communication of medications' side effects. . The secondary outcome is any other improvement in the HCAHPS scores pertaining to patients' understanding of why they are given certain medications. Chi-square test will be used to analyze the categorical data.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 9-394

Poster Title: Fluid resuscitation in end stage renal disease and congestive heart failure patients presenting with sepsis

Primary Author: Khalida Amini, Riverside Regional Medical Center, VA; **Email:** khalida.amini@rivhs.com

Additional Author (s):
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Purpose: Under the current Surviving Sepsis Campaign (SSC) guidelines the recommended initial fluid resuscitation is 30 mL/Kg of crystalloid over the first 3 hours. There are no adjustments or recommendations for patients with conditions that are associated with chronic fluid overload at baseline. The primary aim of this study is to evaluate the volume of fluid resuscitation given to patients with end stage renal disease (ESRD) and congestive heart failure (CHF) admitted to Riverside Health System (RHS) with a diagnosis of sepsis. Through this analysis we hope to identify an optimal range of fluid volume for resuscitation of these patients.

Methods: This study is in the process of being reviewed by the Institutional Review Board. This is a multi-institutional retrospective data analysis, analyzing the charts of ESRD and CHF patients that have been identified as having sepsis in the RHS over the prior 2 years. The researchers will collect data on the daily volume of resuscitation, primary and secondary diagnosis, microbiology, ICU length of stay (LOS), mortality and overall hospital LOS. To help define the patients more accurately we will calculate the Sequential Organ Failure Assessment (SOFA) score for each patient. Each patient will have a randomly assigned identification number and no patient identifiers will be recorded. The primary outcome of mortality will be compared to historical outcomes at Riverside. This study will utilize a SAS version 9.3 (Cary, NC) to perform a multivariant and univariant regression analysis. Means, medians and standard deviations will be reported for continuous variables. This data set will be utilized to determine the optimal volume resuscitation model with the best outcomes for ESRD and CHF patients.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-395

Poster Title: Enhancing an antimicrobial streamlining program: Implementing process improvement strategies

Primary Author: Brooke Smithson, Riverside Regional Medical Center, VA; **Email:** brooke.smithson@rivhs.com

Additional Author (s):
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Purpose: Antibiotic stewardship programs have become a large area of interest since the Centers for Medicare and Medicaid Services (CMS) released a proposed rule that would require hospitals to implement such programs. Antibiotic streamlining, a part of the stewardship initiative, is a major focus to minimize antibiotic resistance, secondary infections, drug toxicity and healthcare costs. A previous study was completed to assess the extent to which clinicians participated in antibiotic streamlining at a large, community, non-profit hospital. The objective of this study is to identify causes/barriers that led to low program involvement and to develop program enhancement strategies.

Methods: This study will be conducted in three phases. During Phase I, two surveys will be conducted, one for pharmacists, the other for physicians. The survey for pharmacists will include questions regarding an antibiotic software alert system, barriers to de-escalating antibiotics, suggestions for program improvement, and documentation of interventions. The physicians' survey will include questions concerning streamlining barriers and suggestions to improve the role of themselves and pharmacists in the program. Phase II will be building and implementing strategies based on Phase I findings to increase clinician participation and improve the antibiotic streamlining program. Phase III will be reassessing the program after implementation of Phase II.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 9-396

Poster Title: Enhancing appropriate antibiotic use in bacteremia with PCR rapid testing.

Primary Author: Amel Abdulaziz, Riverside Regional Medical Center, VA; **Email:** amel.abdulaziz@rivhs.com

Additional Author (s):
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Purpose: Beginning appropriate antibiotic therapy directly following the culture sensitivity results is imperative. PCR rapid testing identifies bacteria within 1 to 2 hours following the gram stain. Early identification of bacteria will aid in prescribing the appropriate antibiotic treatment sooner. The primary objective of this study is to enhance appropriate antibiotic use with the results obtained through PCR rapid testing. Following the culture sensitivity test; patients that are not prescribed the appropriate antibiotics are identified. Secondary objective observes the time the physician requires to prescribe the appropriate antibiotic therapy and compare the PCR rapid test results with the culture sensitivity results.

Methods: This study will be submitted to the Institutional Review Board for approval. Forty gram positive and forty gram negative rapid tests will be provided to the laboratory. The laboratory will perform gram staining and the blood samples will undergo forty consecutive gram positive and forty consecutive gram negative PCR rapid tests. The results from the rapid tests will be provided to the pharmacist and the pharmacist will compare the results with the patients existing therapy. If an adjustment is necessary, the pharmacist will record the appropriate antibiotic therapy using a treatment algorithm approved by an infectious disease physician. Once the culture sensitivity results are available they are compared to the determined algorithm treatment. The time the physician requires to prescribe the appropriate antibiotic therapy will be recorded. Final data from all testing and results will be evaluated to compare the efficacy of rapid testing to standard culture and sensitivity reporting in improving appropriate antibiotic use.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 9-397

Poster Title: Comparison of bleeding and thrombosis rates in rivaroxaban dosed patients using adjusted body weight versus true body weight, a retrospective analysis

Primary Author: Judd Compton, Riverside Regional Medical Center, VA; **Email:** judd.compton@rivhs.com

Additional Author (s):
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Purpose: Renal dosing of rivaroxaban in the ROCKET-AF trial used actual body weight; however, the trial also did not include a large number of patients with extreme body weights. The current dosing practice at Riverside Regional Medical Center (RRMC) is to use adjusted body weight to calculate creatinine clearance. The goal of this study is to compare incidence of bleeding and thrombosis between current dosing practices for rivaroxaban and dosing practices as presented in ROCKET-AF using unadjusted body weight.

Methods: Paper records will be used to identify patients who were taking rivaroxaban prior to admission. The electronic medical record will be analyzed to determine the patient's weight (kg), height (m), BMI (kg/m2), unadjusted creatinine clearance [UCrCl] (mL/min), adjusted creatinine clearance [ACrCl] (mL/min), rivaroxaban dose (mg) prior to admission, gender, and age. All data will be recorded using medical record numbers for confidentiality. For obese patients (BMI > 30 kg/m2), there is a higher likelihood that UCrCl and ACrCl will lead to different doses. Patients will be divided into four groups: correct dosing where UCrCl and ACrCl agree (control group), incorrect dosing where UCrCl and ACrCl agree (excluded group), correct dosing per UCrCl, and correct dosing per ACrCl. The group with incorrectly dosed rivaroxaban where both UCrCl and ACrCl agree will be excluded. The control group will be the patients taking rivaroxaban where dosing with UCrCl and ACrCl agree. Co-primary endpoints are the difference in incidence of thrombosis between test groups and the control group and the difference in incidence of bleeding events between test groups and the control group. Bleeding events are defined as the composite of major and non-major clinically relevant bleeding as defined by ROCKET-AF. Thrombosis events are defined as ischemic stroke, transient ischemic stroke, deep vein thrombosis, pulmonary embolism, and any systemic emboli as charted by the physician.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 9-398

Poster Title: Implementation and evaluation of a pharmacist-driven transition of care (TOC) service at hospital discharge for elderly patients at high risk for readmission

Primary Author: Christopher Robbs, Sentara Healthcare System, VA; **Email:** cmrobbs@sentara.com

Additional Author (s):
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Purpose: Adverse drug reactions and hospitalizations pose significant safety concerns for older adults, as both can decrease functionality and increase morbidity and mortality. In addition, an estimated 20% of older adults who are hospitalized are then readmitted within 30 days of discharge. Adverse drug reactions are a common contributor to emergency department visits as well as hospital admissions and have been reported to contribute to anywhere from 10% to 40% of hospital readmissions in the elderly. Studies have demonstrated that pharmacist intervention during hospitalization and at hospital discharge can reduce inappropriate prescribing, discharge medication errors, all-cause hospital visits, and drug-related readmissions.

Methods: Institutional Review Board approval is pending. We will utilize an electronic medical record to identify patients 65 years of age or older admitted to Sentara CarePlex Hospital who have a primary care provider within Sentara Medical Group. These identified patients will then be screened to determine whether they meet designated criteria for high risk of readmission. Patients who meet these criteria will then be randomized to receive either standard care (control group) or pharmacy intervention. The intervention group will undergo chart review by a resident or a clinical pharmacy specialist. The interventionist will then make recommendations regarding medication regimen optimization and potentially inappropriate medications as outlined by the Beers criteria. Recommended interventions will be sent to primary care providers via electronic message before the follow-up appointment. A retrospective chart review will be performed to determine the number of recommendations accepted by the primary care provider and presence of all-cause 30-day readmission. The success of this service will be measured against the control group by reduction in number of

potentially inappropriate medications, number of interventions made and accepted by the primary care provider, and all-cause 30-day readmission rates.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-399

Poster Title: Medication utilization evaluation of liposomal bupivacaine (Exparel) within a medical and surgical community hospital

Primary Author: Ann Bernacchi, Sentara Martha Jefferson Hospital, VA; **Email:** acbernac@sentara.com

Additional Author (s):
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Purpose: Liposomal bupivacaine (Exparel) is approved for postoperative analgesia in patients undergoing bunionectomy or hemorrhoidectomy. The extended half-life and duration of action of Exparel has been shown to diminish opioid usage and shorten the hospital length of stay. Exparel is currently being utilized in many types of off-label surgical procedures at this institution. The purpose of this medication utilization evaluation (MUE) was to evaluate the post-operative use of opioids and analgesics in patients receiving Exparel as a local analgesic agent during surgery. The evaluation was conducted to characterize usage patterns and clinical outcomes in surgical patients.

Methods: An observational MUE was conducted over a 3-month period (May 1, 2016 through July 31, 2016) at Sentara Martha Jefferson Hospital, a 176-bed medical and surgical community hospital. A retrospective chart review was performed using the system's electronic medical record, via a data inquiry generated from AcuDose-Rx automatic dispensing cabinet records. All patients dispensed at least one dose of Exparel were eligible for inclusion in the MUE. Data collected included the type of surgery, type of anesthesia used, surgeon, length of stay, additional local analgesics given with liposomal bupivacaine, and strength and number of doses of opioids and other pain relievers, such as non-steroidal anti-inflammatory drugs (NSAIDs) and acetaminophen (APAP). Additional clinical data was compiled by orthopedic surgery team members, which included post-operative distance walked and range of joint motion in degrees. This 2016 data was compared to previously collected data in two earlier MUE projects at the institution conducted in 2014, characterizing Exparel use between May 19, 2014 through June 30th 2014 and July 1, 2014 through September 15, 2014.

Results: During the 2016 three-month data collection period, 193 surgeries were performed utilizing Exparel, with the most commonly performed surgery being total knee replacement. The average length of stay for the collection period was 2.1 days, which has decreased from 2.8 days in 2014. The total amount of additional opioid analgesics in morphine equivalents during post-operative hospitalizations has decreased from an average of 205.8mg immediately pre-Exparel implementation in 2014, to 174.7 and 141.5mg later in the year in 2014, to 123.9mg in 2016, demonstrating an overall reduction of 81.9mg in oral morphine equivalents or an average 39.8% reduction in opioid usage. The use of NSAIDs has decreased along with opioid use. After Exparel implementation, total APAP used for post-operative pain increased by 3-fold (2,456mg to 6,935mg average throughout hospitalization). Seventy-one percent of patients received one or more additional local analgesics along with Exparel. The mean pain score, recorded on a scale of 1 to 10, for the patients receiving Exparel in 2016 was 3.5. The average distance walked during hospitalization was 981.9 feet in hip and 953.1 feet in knee surgeries. At discharge, for patients who underwent knee surgeries, the average joint flection and extension were 90.7 and -2.07 degrees, respectively.

Conclusion: Overall opioid use for post-operative pain at this institution decreased after the addition of Exparel to formulary, which could be attributed to the use of Exparel, conscientious prescribing of opioids, or an increasing comfort of physicians with non-opioid pain control regimens. The increasing use of APAP in place of opioids is seen as a positive change, given a patient has adequate hepatic function and maximum daily doses are monitored. Limitations include the retrospective nature of this study and inconsistencies between the separate MUE comparison groups. Future clinical and cost-benefit analyses are needed to further document the use of Exparel.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 9-400

Poster Title: Retrospective evaluation to determine safety and efficacy of ultra long acting insulin analogs (Tresiba® and Toujeo®) versus long acting insulin analogs (Lantus® and Levemir®)

Primary Author: Meredith McCauley, Shenandoah University, VA; **Email:** mmccaule2@su.edu

Additional Author (s):
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Michelle Rager
Dawn Havrda

Purpose: The purpose of this study is to evaluate the safety and efficacy of ultra long acting basal insulin compared to long acting basal insulin in diabetics seen in a pharmacist-led diabetes service within an internal medicine, family practice and cardiology outpatient clinic. Safety will be assessed based on hypoglycemic events and efficacy will be assessed based on glycemic control through hemoglobin A1c analysis.

Methods: A retrospective chart review will be conducted at a physician group practice in Winchester, Virginia. Patients will be identified from excel spreadsheet that track patients who are followed by the pharmacy team. Patients included in analysis will be on Tresiba®/Toujeo® or Lantus®/Levemir® from the time period of January 1, 2015 through June 30, 2016. Patient selection for analysis will be determined by assessing eligibility of every 3rd patient from spreadsheet and repeating process until approximately an N = 50 meet inclusion criteria. Inclusion criteria: on long acting or ultra long acting basal insulin, over 25 years of age, and an established patient at Selma Medical Associates, Inc. (at least 2 office visits with pharmacy team within last 18 months). Exclusion criteria: not on long acting or ultra long acting basal insulin, less than 25 years of age, less than 2 office visits over the last 18 months and incomplete chart information. Eligible patients' electronic medical record will be reviewed to collect information regarding demographics, details of basal and bolus insulin drug therapies, diagnoses, lab results: A1c and fasting blood glucose, home blood glucose monitoring, hypoglycemic events, starting insulin dose (if identifiable) and dose when A1c at goal.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 9-401

Poster Title: Venous thromboembolism (VTE) prophylaxis in obese patients: A medication use evaluation of low molecular weight heparin and unfractionated heparin

Primary Author: Joseph D'Astoli, Valley Health, VA; **Email:** jdastoli@valleyhealthlink.com

Additional Author (s):
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Purpose: Venous thromboembolism (VTE) prophylaxis is recommended for most patients admitted to the hospital. Obese patients in particular (patients with a body mass index greater than 30) are more likely to experience VTE and twelve times more likely to die of a pulmonary embolism. Recent studies show that standard prophylaxis dosing of enoxaparin and heparin may be insufficient in obese patients. The purpose of this study is to assess how often VTE prophylaxis with heparin and enoxaparin is dose adjusted for obesity. This study is designed to evaluate if there is any benefit or harm associated with dose adjusting for obesity.

Methods: This medication use evaluation will be submitted to the Institutional Review Board. The electronic medical record will identify a list of four hundred patients weighing greater than 150 kilograms. A retrospective chart review will be performed on each patient to determine the agent and dose used for VTE prophylaxis. Other data collected will include age, sex, platelet count, body mass index (BMI), the distribution of surgical and medical patients, and length of stay. The primary objective of this medication use evaluation is to determine the current practice in terms of dosing obese patients. Secondary objectives will be correlating current practice with the rate of VTE and the rate of major and minor bleeding in the obese population receiving prophylaxis. Patients will be excluded from this analysis if they have a history of atrial fibrillation, are already on systemic anticoagulation, or are admitted for bleeding.

Results: To be reported.

Conclusion: To be reported.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Descriptive Report

Session-Board Number: 9-402

Poster Title: Evaluation of prothrombin complex concentrate (PCC) use in a 445-bed community hospital

Primary Author: Elizabeth Walters, Valley Health, VA; **Email:** ewalters@valleyhealthlink.com

Additional Author (s):
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Jeffery Spray

Purpose: Prothrombin complex concentrate (PCC; Kcentra) was approved by the FDA in April 2013 for urgent reversal of warfarin induced coagulopathy in adults with major bleeding. The medical center approved PCC for (1) International Normalized Ratio (INR) greater than two and life-threatening bleed due to warfarin (2) urgent or emergent surgery in patients taking warfarin or Xa inhibitor (3) bleeding due to warfarin or Xa inhibitor. PCC is a medication of interest due to expense, potential thromboembolic events, and specific indications. The purpose of this retrospective study is to evaluate appropriateness of PCC prescribing and the safety implication of this agent.

Methods: This medication use evaluation will be submitted to the Institutional Review Board for approval. A retrospective chart review using the electronic medical record will be conducted on patients administered PCC from February 2015 to September 2016. Patients will be excluded if they are younger than 18 years of age. The primary end point is to determine if PCC was used appropriately for (1) a Xa Inhibitor or a vitamin-K antagonist induced bleed or (2) urgent or emergent surgery in patients taking warfarin or Xa inhibitor. Secondary end points are incidence of thromboembolic events (TEE), risk for thrombosis, PCC dose, off-label use, length of stay, and INR at baseline, after PCC and at 24 hours. TEE is defined as deep venous thrombosis (DVT), pulmonary embolism (PE), myocardial infarction (MI), stroke or transient ischemic attack, or any other arterial or venous thrombosis by imaging. TEE that occurred within 3 days of PCC administration will be consider to be caused by PCC, due to K-dependent clotting factors long half-lives.
Data collected will include demographic information, prescriber, location of administration, indication, type of surgery, dose (units/kg), administration time, pre and post PCC

hemoglobin/hematocrit/platelets/INR, INR after PCC, location of bleed, imaging, vitamin K, anticoagulant prior to PCC, blood administration, length of stay, length in intensive care unit (ICU), readmission within 90 days, and adverse reactions (e.g. DVT, PE, stroke, death).

Results: Results to be reported.

Conclusion: Conclusion to be reported.

Submission Category: Clinical Services Management

Submission Type: Descriptive Report

Session-Board Number: 9-403

Poster Title: Impact of chronic obstructive pulmonary disease (COPD) pocket card and provider education on the number of patients discharged on optimized therapy regimens.

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Purpose: The Affordable Care Act (ACA) called for the Center for Medicare and Medicaid (CMS) to implement changes to payment models for hospitals, including the Bundled Payments for Care Improvement (BPCI) initiative and the Hospital Readmissions Reduction Program (HRRP). Due to the high prevalence and readmissions associated with COPD admissions in the region, the health system investigated ways to prevent readmissions and elected to participate in the COPD BPCI initiative. The health system initiated a multi-modal approach to optimize medication therapy on discharge, which was achieved through use of provider education and development of a COPD pocket card.

Methods: A problem solving A3 was performed to identify barriers that contribute to COPD readmissions. Through a fish bone analysis, provider education and optimizing medication regimens were selected as key areas of improvement. Based on the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines, a recommended regimen for patients admitted with a COPD exacerbation includes a short-acting rescue inhaler, an inhaled corticosteroid (ICS), a long-acting beta agonist (LABA), and a long-acting muscarinic agonist (LAMA). To aid providers in selecting the appropriate combination therapy, a COPD pocket card was created to include medication classes and dosing regimens. Medication classes were distinguished by color to ensure providers were selecting the appropriate combination. Two educational sessions were held to review the recommended COPD therapy regimen, one for internal medicine staff and one for providers. The COPD pocket card was distributed to providers in April 2016 and the educational sessions were in April and May 2016. To assist providers, a team of nurse educators and pharmacy residents consulted on COPD-related admissions for patient education and

medication recommendations to optimize quadruple therapy. All patients with COPD-related diagnosis related-group (DRG) codes were included to determine the number of patients discharged on quadruple therapy.

Results: From January 2015 to March 2016, 33.83 percent (standard deviation 9.41) of patients discharged with a COPD-related DRG code were on quadruple therapy. From April 2016 to August 2016, 51.19 percent (standard deviation 9.99) of the same population were discharged on quadruple therapy. Utilizing a two-sample T-test, a statistical difference was found after implementing the COPD pocket card and education classes with continued nurse educator and pharmacy resident involvement. (P equals 0.014, 95 percent CI -29.80, -4.92).

Conclusion: Significantly more patients were discharged on quadruple therapy after initiating provider education and the use of a COPD pocket card along with the continued support of nurse educators and pharmacy residents.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 9-404

Poster Title: Implementation of an electronic alerting tool in a community teaching hospital to prevent inpatient hypoglycemic adverse drug events

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Purpose: Glycemic control efforts in hospitals are often limited by the concern for hypoglycemic adverse drug events. Hypoglycemia, defined by the American Diabetes Association (ADA) as a blood glucose (BG) < 70 mg/dl and severe hypoglycemia defined as a BG < 40 mg/dl, constitutes a medical emergency. Inpatient team members must be vigilant in detecting, treating, and most of all preventing hypoglycemia in diabetic patients. The specific aim of this study is to show that implementing a hypoglycemic alerting tool supported by trained pharmacist responders is valuable for reducing the incidence of hypoglycemic adverse drug events in our hospital.

Methods: This study will involve monitoring patients admitted to a 350-bed community teaching hospital located in Arlington, VA, from October 2016 through January 2017. A computer generated alert will identify patients with a potential risk for drug-associated hypoglycemic events. The alert will be directed to the pharmacist for any adult patient with a BG < 90 mg/dl and an active hypoglycemic medication order. The pharmacist is responsible for reviewing the patient's profile and then contacting the prescriber for modification to therapy. The primary outcome of this study is the rate of hypoglycemic occurrence before and after implementation of the alert system. The secondary outcomes are rates of severe hypoglycemia episodes of BG < 40 mg/dl, length of stay, transfer to a higher level of care, and percentage of prescriber's acceptance of pharmacist recommendations. All data will be de-identified and maintained in a secure and confidential manner. This study will be submitted to the institutional review board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 9-405

Poster Title: Implementation of pharmacy resident directed antimicrobial stewardship activities in a community teaching hospital

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Purpose: Pharmacists have a responsibility to take prominent roles in antimicrobial stewardship programs in the hospital setting. The Joint Commission recently announced a new Medication Management standard for hospitals which addresses antimicrobial stewardship and becomes effective January 1, 2017. Additionally, the Centers for Medicare and Medicaid Services is developing a Condition(s) of Participation on antimicrobial stewardship in the hospital setting. The Virginia Hospital Center antimicrobial stewardship program emphasizes generally accepted interventions recommended by Infectious Disease Society of America Guidelines. The purpose of this research is to determine the impact of pharmacy resident directed antimicrobial stewardship activities in a community teaching hospital.

Methods: Pharmacists at Virginia Hospital Center are responsible for daily monitoring and documentation of antimicrobial stewardship activities for all adult patients with antibiotic orders. Patients receiving antibiotics are identified by an electronic report. The pharmacy resident will receive antimicrobial stewardship training during the Infectious Disease rotation. After successful completion of the Infectious Disease rotation, the resident will perform antimicrobial stewardship activities for the medical oncology unit beginning October 2016. Protocol compliance will be reviewed as the primary outcome measure. Secondary outcome measures include intervention documentation, estimated cost savings, de-escalation activities and rate of prescriber accepted recommendations.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Descriptive Report

Session-Board Number: 9-406

Poster Title: Analysis of drug shortages' effect and cost at a tertiary university hospital

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Purpose: Drug shortages are becoming more frequent in our country as well as in the rest of the world and working to find a solution, at least for some of them, is mandatory. With this work, we decided to analyse the drugs that had shown a shortage at some point in the last three months as reported by the Spanish Drug and Health Product Agency (AEMPS) and how they have affected our hospital, as well as the measures we have had to take to overcome those shortages and the cost associated with those measures.

Methods: We analysed the notifications of drug shortages of the AEMPS that remained active at any time point from the 1st of June to the 31th of August 2016, shortages solved or not at the moment of analysis. We studied how long the shortage had lasted only in the ones that had already resolved, since the notified end of shortage date usually changes several times before the real resolution of the situation. We then divided drugs into two categories, those that we have at our hospital and those we don´t. Among the drugs included at our hospital, we registered what measures we had to take to overcome that shortage. We analysed the direct cost associated to buying alternative drug products due to the shortage and the price increase percentage of each one of those. In the case of drugs with a change of dosage comparing to the drug product used at our hospital, the cost was calculated per active unit of drug (milligrams or grams) instead of per presentation unit (tablet, bottle). We finally looked into the laboratories that produced the drugs affected by shortages.

Results: We analysed 238 shortages of 231 different drug products. Eight companies produce 59.2% of these drugs on shortage and two 24.4%, from a total of 57 companies. 91 shortages had already resolved. The average time of resolution was 69 days.
56 shortages, of 52 different drug products, involved drugs used at our hospital. To overcome this shortages, we borrowed the drug from another hospital (2), we obtained it from a pharmaceutical wholesaler instead of doing it directly from the pharmaceutical company (5), we ordered another drug with the same active principle, national (11) or foreign (4), we restricted the drug's use (6), we changed the active principle (1), we had enough stock until the resolution of the shortage (27) or nothing could be done (1). 16 cases involved buying a different product. The median of the original cost of these 16 drugs was 1.1$ per unit [0.04-70.6$]. The price of the alternative was a median of 121.5% (97%-4422%) higher, with a mean direct incremental cost of 592.4$ [(-44.4$)-(+4034.9$)]. The total cost of buying these alternative drugs was 9487.3$.

Conclusion: Our analysis shows that drug shortages are a prevalent problem. There is a monetary cost associated to them and a big relative cost increase but the global economic burden is low, probably due to the low price of most of the drugs on shortage. The fact that shortages can cause delays of treatment and medication errors because of the need to use drug products with different active ingredients, doses or presentations, seems more worrisome. A reflection needs to be done in order to understand the causes of these shortages and to try to find global solutions to this growing problem.

Submission Category:

Submission Type: Research-in-Progress

Session-Board Number: 9-407

Poster Title: Antimicrobial Stewardship in a Rural Community Hospital

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Purpose: Antibiotic use in the treatment of numerous bacterial related infections has improved the health and wellbeing of countless patients. However, 20-50% of the antibiotics prescribed in our hospitals are excessive and unwarranted and can lead to the growing problem of antibiotic resistance. In response to this growing problem, antimicrobial stewardship programs (ASPs) are being implemented in hospitals across the country to better manage antibiotic use. The purpose of this study is to compare the use of now 'restricted' antimicrobial agents prior to the implementation of an ASP to the use after the program has been implemented.

Methods: This study is a single center, combined retrospective/prospective, observational study on the impact of an ASP with regards to the use of restricted antibiotics within the institution. It will include all patients who are prescribed meropenem, ertapenem, daptomycin, linezolid or who are on piperacillin/tazobactam for greater than three days. The data being collected will consist of baseline demographics (including but not limited to sex, race, history of a multidrug-resistant organisms), the restricted antibiotic ordered, antibiotic allergies, description of allergy (if available/known), prescribing physician, date/time provider contacted, positive culture, source of positive culture, kidney function measures (baseline and on day of order), antibiotic indication, rationale for selection, and did provider change antibiotic selection after being contacted. Results will be grouped into whether the initial restricted antibiotic was indicated initially and whether or not a non-indicated medication was changed based on pharmacist recommendation.

Results: : Data collection is currently in progress so results and conclusions are pending completion of this process.

Conclusion:

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-001

Poster Title: Identification and management of patients at risk of secondary osteoporosis in a community pharmacy setting: evaluation of clinical and humanistic outcomes of community-based MTM service

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Purpose: Osteoporosis is a condition which affects over ten million Americans, contributes to over two million bone fractures annually, and is responsible for billions of dollars in healthcare costs alone. Secondary osteoporosis is low bone mineral density which occurs subsequent to specific medical conditions and medication use. Few studies have been conducted to evaluate pharmacist-led screening and management of secondary osteoporosis. With the known association between medication use and secondary osteoporosis, community pharmacists can provide enhanced screening and counseling services to improve identification and management of secondary osteoporosis. This study seeks to provide a framework for pharmacist-led ambulatory osteoporosis screening services.

Methods: This prospective cohort study will take place at the Auburn University Employee Pharmacy (AUEP) and Auburn University Pharmaceutical Care Clinic (AUPCC). Within the AUEP, medication fill histories will be reviewed at the time of prescription data entry and verification for: long-term use (use > 12 months) of proton pump inhibitors, selective serotonin reuptake inhibitors, and injectable medroxyprogesterone use > 3 months. Once identified, patients will be provided information regarding secondary osteoporosis and offered an appointment to meet with a pharmacist for bone mineral density assessment and counseling.
At the appointment at the AUPCC, participants will have their bone mineral density assessed via quantitative ultrasound. A pharmacist or student pharmacist will discuss the results with participants as well as provide additional information regarding secondary osteoporosis and

contributing risk factors. Participants will be counseled on the prevention of osteoporosis and provided with supplementation for calcium and vitamin D. Patients identified with clinical osteoporosis will be referred for further evaluation.
The primary outcome to be evaluated is the number of patients identified with osteopenia (defined as T-score < -1 but > -2.5) and osteoporosis (defined as T-score < -2.5). The secondary outcome of the study is an evaluation of baseline characteristics and association with risk of osteopenia or osteoporosis. Ultimately, this study will provide data and insight into the impact of a community-based pharmacist targeted osteoporosis screening program.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-002

Poster Title: Evaluating fourth year student pharmacist empathy towards patient weight loss through active learning.

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Purpose: With the growing obesity epidemic, an interdisciplinary approach that includes pharmacists is being proposed to assist obese patients in losing weight. Empathy from providers has been shown to help patients with weight loss. While accreditation standards place greater emphasis on developing skills such as empathy, the rates of empathy decrease throughout a professional program. Having students participate in active learning activities has increased empathy towards patients with other disease states. The study objective is to determine if fourth year pharmacy students participating activities focused on the tools for weight loss will impact their empathy towards patients attempting to lose weight.

Methods: This study will take place at various ambulatory care practice sites affiliated with Auburn University. Fourth year pharmacy students who are completing their advanced pharmacy practice experience (APPE) rotations will be asked to participate. Students will have their empathy measured towards patients attempting lifestyle changes with the Jefferson Scale of Empathy on the first day of their rotation. Additionally students will be asked about their own diet and exercise before starting the activity, this will be done in an attempt to see if students' habits prior to the study will have an effect on their empathy level. The students will then start tracking their calories and steps on applications available on smart phones. There will not be a requirement to set any calorie or exercise goals, however students will not be penalized if they choose to do so. Students will be excluded if they participated at another practice site or have a history of anorexia nervosa or bulimia. At the end of the five weeks, students will then take the same empathy scale to document if there are any changes in their empathy toward patients. Additionally their confidence level will be assessed along with the student's compliance with the activity.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-003

Poster Title: Evaluation of RASS Documentation in an Intensive Care Unit

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Purpose: The Richmond Agitation Sedation Scale (RASS) is a validated instrument used to measure the level of sedation of patients in the ICU. The current sedation policy at Baptist Medical Center South requires intensive care nurses to perform RASS assessments and document RASS scores every four hours, titrating sedatives as needed to maintain a goal score of 0 to -2. It is unclear whether these assessments are being conducted appropriately and if the corresponding titrations are being made. The purpose of this study is to evaluate the accuracy of RASS assessments and determine if they are associated with appropriate sedative titrations.

Methods: This study will be submitted to the Institutional Review Board for approval. All patients in the cardiac intensive care unit receiving mechanical ventilation and continuous sedative infusions during the months of October and November will be included in the study. Patients receiving neuromuscular blockers, brief mechanical ventilation (< 12 hours), solely intermittent sedation, or tracheostomy will be excluded from the study. A clinical reference rater (BMCS pharmacy resident) will conduct twice daily RASS assessments on each patient meeting criteria and compare their RASS scores to the documented RASS scores obtained from the electronic medical record. Results will be evaluated using overall weighted-kappa to determine the level of agreement between parties. Demographics, RASS scores (nursing and reference rater), amount of sedation used, length of ICU stay, length of hospital stay, and incidence of ventilator-associated pneumonia (VAP) will be collected. Nursing education will be conducted after the first month of the study and additional data collection will take place during the second month. Results will be evaluated for improvement in RASS accuracy (i.e. improved level of agreement between reference rater and nurse) over the course of the study period. All data will be recorded without patient identifiers to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-004

Poster Title: Implementing a benzodiazepine-sparing sedation protocol for ventilated patients in the intensive care unit

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Purpose: The 2013 Pain, Agitation, and Delirium guidelines suggest using nonbenzodiazepines as the sedative of choice. This choice is associated with improved clinical outcomes in mechanically ventilated ICU patients. Benzodiazepines may be a risk factor for the development of delirium; therefore avoiding their use may reduce mortality, ICU and hospital length of stay, and the development of post-ICU cognitive impairment. The purpose of this study is to analyze patient outcomes associated with decreasing the use of benzodiazepines and utilizing fentanyl's analgosedative properties in combination with propofol to acquire proper sedation in the Medical ICU.

Methods: This study will be submitted to the Institutional Review Board for approval. A benzodiazepine-sparing sedation protocol will be initiated in the Medical ICU for ventilated patients that targets analgosedation with fentanyl in combination with propofol. Each patient will receive treatment from the study protocol within 48 hours of intubation. Alternative sedation regimens used prior to study enrollment will be discontinued upon initiation of study protocol and patients will be sedated with a RASS goal of 0 to -2. Collected data will include patient's age, gender, weight, renal function, reason for admission, neuromuscular blockage usage, and medications used prior to initiation of study drug protocol. Patient outcomes prior to and after implementation of the study protocol in the Medical ICU will be compared. The following outcomes will be analyzed: number of days in the ICU and hospital, number of attempts to wean a patient off the ventilator until successful, occurrence of RASS documentation between 0 to -2, administration of antipsychotic medications, and occurrence of delirium. The reviewers will compare each study group to determine benefit from eliminating benzodiazepine usage for sedation.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-005

Poster Title: Use of a procalcitonin-based antimicrobial stewardship recommendation to reduce duration of antibiotics in patients with sepsis and/or pneumonia

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Purpose: The purpose of this research project is to analyze the effect of procalcitonin-based antimicrobial stewardship recommendations on antibiotic duration for pneumonia and sepsis. Procalcitonin (PCT) is a biomarker that is specific for bacterial infections versus viral or non-infectious causes, making it a useful tool in identifying the need for antibiotics. Studies utilizing PCT to guide antibiotic decision-making for patients with lower respiratory tract infections (LRTI) and sepsis have found reductions in antibiotic durations ranging from 1.5 – 4 days and a potential cost savings of ~10%, with no increased risk of mortality, adverse events, or infection relapses.

Methods: This study will utilize a pre/post study design, with a retrospective control group and a prospective intervention group. A non-binding PCT algorithm for suspected pneumonia and sepsis has been developed by the pharmacy resident, approved by the hospital's infectious disease physician, and will be used to base antibiotic stewardship recommendations after the availability of in-house PCT testing in November 2016.
Patients will be included in the prospective study if they have at least 1 PCT level ordered and a newly suspected infectious process of pneumonia and/or sepsis (based on physician diagnosis). The pharmacy resident will actively follow patients and make recommendations for prescribers to discontinue or de-escalate antibiotic therapy based on PCT results. The retrospective control group will consist of chart reviews to determine average antibiotic duration prior to the availability of PCT testing and prior to the implementation of PCT-based stewardship recommendations. The primary outcome will be duration of antimicrobial therapy, defined as the number of hours between the start and end of antibiotic treatment. Secondary outcomes

will include length of stay (LOS) in the hospital, LOS in the ICU, antimicrobial costs, mortality, rate of antibiotic de-escalation based on PCT interventions (defined as discontinuation of an antimicrobial agent or change of antibiotic to one with a narrower spectrum), number of PCT stewardship recommendations accepted vs. rejected, and time taken for stewardship interventions.

Results: n/a

Conclusion: n/a

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-006

Poster Title: Evaluation of Pharmacy Resident Discharge Counseling on 30-Day Readmission Rates for High-Risk for Readmission Patients with a Heart Failure Exacerbation or Acute Myocardial Infarction

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Purpose: The purpose of this research project is to evaluate the effect of pharmacy resident driven discharge counseling for patients at a high risk for readmission admitted with a heart failure (HF) exacerbation or acute myocardial infarction (AMI). Studies have shown pharmacist involvement at discharge can improve patient satisfaction, readmission rates, and ease transitions of care. This study will be conducted in a community hospital where the current standard of care is having nurses complete all aspects of discharge counseling.

Methods: This is a prospective study with an intervention made by the pharmacy resident completing this study. There will be two patient groups, the intervention group and the control group. Patients will be included into either group if they are identified as high-risk for readmission and admitted due to a HF exacerbation or AMI . Once a discharge order is placed, the resident will receive an email for patients included in the study. If the resident is able to reach the patient before he/she leaves, he/she will be included in the intervention group. In the intervention group, the resident will complete a medication review of the physician's reconciliation and make interventions as needed. These patients will also receive a medication schedule and education from the resident. The control group will obtain the current standard of care. Both groups will be followed 30 days after discharge to determine primary and secondary outcomes. The primary objective for this study is 30-day hospital readmissions. The secondary objectives include, categorization of pharmacist interventions, reasons for hospital readmission, the time interval between discharge and readmission, the number, reasons, and time interval for emergency department (ED) visits within 30 days of discharge, the percentage of patients

who fill their new prescriptions through insurance within two weeks of discharge, and the time to complete interventions, create medication schedules, and counsel the patients.

Results: n/a

Conclusion: n/a

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-007

Poster Title: Evaluation of infection risk associated with biologic treatment in rheumatic diseases

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Purpose: While rheumatic diseases left untreated can result in severe disabilities and reduced quality of life, previous studies have confirmed the direct relationship between use of biologic agents and high incidence of infections as a result of secondary immunodeficiency. The purpose of this study is to objectively quantify the infection risks associated with biologic disease-modifying anti-rheumatic drugs (DMARDs) so that opportunities to improve outcomes and decrease hospital admissions/readmissions related to infectious complications may be identified.

Methods: This single-center retrospective study has been approved by the Institutional Review Board. The primary outcome will be incidence of serious infections defined as those that lead to Intensive Care Unit (ICU) admission, hospital floor admission, or intra-venous (IV) antibiotic use. The secondary outcome will be prescriptions written for antibiotics in the outpatient setting. The electronic medical record system will identify patients ≥19 years old, currently treated for any rheumatic disease, and with a disease duration of ≥ 6 months. All data will be recorded without patient identifiers and maintained confidentially. The following data will be collected: 1) Age 2) Comorbidities 3) Smoking status 4) Previous and current DMARD therapy 5) Previous and current steroid use (dose equivalent to ≥ 10 mg prednisone ≥ 2 weeks) 6) Number of observations resulting from infections and corresponding level of care received. Patients will be stratified into the following risk categories: 1) Traditional DMARD monotherapy 2) Traditional DMARD combination therapy 3) Biologic DMARD monotherapy 4) Biologic + traditional DMARD combination therapy; all groups +/- steroid use. Collected number of observations and their

corresponding level of care will be analyzed in each stratification group to evaluate infection risk.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-008

Poster Title: Comparison of vancomycin treatment failures for methicillin-resistant Staphylococcus aureus bacteremias (MRSABs) stratified by minimum inhibitory concentrations (MICs)

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Purpose: Optimal treatment of methicillin-resistant Staphylococcus aureus bacteremias (MRSABs), when vancomycin minimum inhibitory concentrations (MICs) are high within the susceptible range, is of concern due to the high rate of mortality and increased prevalence of this infection. The reported incidence of vancomycin treatment failures when MICs are greater than 1 microgram per milliliter varies in recent literature, and current guidelines do not provide definitive recommendations for this situation. The purpose of this study is to evaluate vancomycin treatment failures in patients with MRSAB stratified by vancomycin MIC.

Methods: This study has been approved by the Institutional Review Board. This will be a retrospective chart review to evaluate vancomycin MICs and patient outcomes at one center between July 2010 and December 2016. Patients with positive blood culture data for MRSA will be reviewed via electronic health records for inclusion and for the collection of all data points. Data to be collected will include: demographic information, antibiotic selection for MRSAB, antibiotic dosing information, laboratory information relating to monitoring of antibiotics and renal function, source of MRSAB, comorbid conditions, source control, and concomitant medications. The primary outcome is to determine a difference in rates of vancomycin treatment failure between patients with vancomycin MICs less than or equal to 1 microgram per milliliter or vancomycin MIC of 2 micrograms per milliliter. Vancomycin treatment failure will be defined as microbiological failure or persistent signs and symptoms of infection at seven days. Inpatient mortality, 30-day readmission, vancomycin-associated nephrotoxicity, early

bacteremia clearance at 48 to 96 hours, and vancomycin treatment failures at 96 hours will be assessed as secondary endpoints.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-009

Poster Title: Piperacillin-tazobactam loading doses prior to extended infusion in critically ill patients

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Purpose: Piperacillin-tazobactam is a time dependent antibiotic. Prolonged infusion piperacillin-tazobactam has been shown to improve outcomes, however different loading doses prior to prolonged infusions have not been evaluated. Loading doses administered over 30 minutes prior to initiation of prolonged infusions prevent delays in concentrations reaching the minimum inhibitory concentration (MIC) and allows other intravenous medications to be administered sooner. The objective of this study is to determine if a difference in hospital length of stay exists between patients receiving a 3.375 gram or a 4.5 gram loading dose prior to initiation of extended infusions of piperacillin-tazobactam in critically ill patients.

Methods: This institutional review board approved retrospective chart review will utilize electronic medical records to identify patients who meet the following inclusion criteria: adult patients admitted to the intensive care unit (ICU) treated with piperacillin-tazobactam for at least 48 hours and have a creatinine clearance of 20 milliliters per minute or greater. Patients to be excluded are those who have hospital acquired pneumonia, ventilator associated pneumonia, those who received a concurrent anti-pseudomonal beta lactam within 5 days of piperacillin-tazobactam therapy, if goals are changed to comfort care, and those transferred from another facility. The primary outcome will be hospital length of stay (LOS). The secondary outcomes include ICU LOS, all cause hospital mortality, 30 day mortality, 30 day readmission, duration of therapy, time to defervescence, and time to white blood cell count resolution. A 3.375 gram loading dose given over 30 minutes followed by prolonged infusion 3.375 grams every 8 hours from September 2015 to May 2016 will be compared to a loading dose of 4.5 grams given over 30 minutes followed by prolonged infusion 3.375 grams every 8 hours from September 2016 to May 2017. Data to be collected includes demographic information,

comorbidities, recent healthcare institution exposure, microbiological data, concomitant antibiotics, the acute physiologic assessment and chronic health evaluation II (APACHE II) score, and the sequential organ failure assessment (SOFA) score.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-010

Poster Title: Transitions of care in a large community based hospital

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Katie Farris

Purpose: Transitions of care is defined as changes in the level, location, or providers of care as patients move within the health care system. Such transitions can be critical points in a patient's care. If transitions of care are poorly coordinated, especially when a patient is discharged from a healthcare facility, the chance of readmission is greatly increased. Improving care transitions continues to be a major focus in the national healthcare system. The purpose of this study was to study the impact made by starting a transitions of care pharmacy pilot in a large community based hospital.

Methods: The transitions of care pilot was initiated on three of the family practice units of the hospital. A major aspect of the pilot was daily multidisciplinary rounds between social workers, nurses, pharmacists, and physical therapists. The transitions of care pharmacist would then determine from the information received during rounds which patients should be seen for the day for medication reconciliation or discharge education. High priority was given to patients with multiple disease states, multiple medications, and to patients being discharged either to home self-care or home health. The transitions of care pharmacist was responsible for discharge medication reconciliation and for providing the patient with a written discharge sheet overviewing the medications the patient would take upon discharge. For the pilot, there was one transitions of care pharmacist, two licensed practical nurses, and several fourth-year pharmacy students who took an active role.
Data was collected on each medication reconciliation, whether admission or discharge, with emphasis on the duration of time spent, any errors corrected, and whether or not the transitions of care team was simply reviewing, correcting, or completing the medication reconciliation. The data was then compared to data collected before the pilot was started, and

evaluated to determine whether or not there was a difference in the duration of time it took to complete a medication reconciliation and the amount of errors corrected.

Results: Research in Progress

Conclusion: Research in Progress

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-011

Poster Title: Implementation of guidelines for the management of duplicate medication orders

Primary Author: Shea Davis, Huntsville Hospital, AL; **Email:** shea.davis@hhsys.org

Additional Author (s):
Michele Durda

Purpose: Duplicate medication orders can lead to patients receiving inappropriate therapy as well as unintentional outcomes. These duplicate orders are often a result of multiple overlapping orders sets in combination with previous individual orders. Moreover, duplicate orders may lead to regulatory compliance issues with Joint Commission. For these reasons, institutional guidelines were established to provide pharmacists strategies for responding to duplicate medication orders without clear criteria for their use. The purpose of this study is to determine if the implementation of these guidelines effectively reduced the amount of duplicate medication orders with the ultimate goal of improving patient safety.

Methods: Duplicate medication orders guidelines were developed and approved by the Huntsville Hospital Pharmacy and Therapeutics committee. These guidelines allow pharmacists to automatically discontinue duplicate medication orders or adjust the "as needed" (PRN) indication on orders with duplicate indications. For this study, new guidelines for addressing duplicate medication orders were established, and pharmacist education was provided for their use. Data will be collected from chart reviews and compared to data collected prior to establishing new guidelines. In general, the pharmacist will review the following characteristics of the orders to determine the appropriate action to follow per the guidelines: PRN versus scheduled, sequence of orders, origin of each order, dose, frequency, route, and indications. Pharmacists will use their clinical judgment and contact the prescriber with concerns regarding duplicate orders or duplicate indications. Any duplicate medication order without clear criteria will be assessed by the reviewing pharmacist and automatically discontinued if deemed appropriate.

Results: Data is currently being collected for this study. The status is research-in-progress.

Conclusion: Data is currently being collected for this study. The status is research-in-progress.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-012

Poster Title: Evaluation and implementation of an automatic nurse-driven protocol for discontinuation of alvimopan in post-operative colorectal surgical patients

Primary Author: Fernando Diggs, Huntsville Hospital, AL; **Email:** fernando.diggs@hhsys.org

Additional Author (s):
Jonathan Spry

Purpose: Alvimopan is indicated to accelerate the time to upper and lower gastrointestinal recovery following surgeries that include partial bowel resection with primary anastomosis. Alvimopan is administered for up to seven days or until the patient is discharged, usually following the first post-operative bowel movement. The objective of this study is to analyze the utilization of alvimopan in post-operative colorectal surgical patients at Huntsville Hospital and to determine if an automatic nurse-driven protocol after the first post-operative bowel movement results in decreased unnecessary use and cost savings.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients who have had a colorectal procedure and received alvimopan. The following data will be collected: patient age, gender, surgery type, pertinent medications, and reported adverse medication events. If available, results of renal and hepatic function tests will be collected. All data will be recorded without patient identifiers and maintained confidentially. This information will be analyzed to determine the total number and cost of alvimopan doses administered following the first post-operative bowel movement. A nurse-driven discontinuation protocol will be implemented for the patients of one colorectal surgeon and similar data will be recorded. The protocol will give nurses the autonomy to discontinue alvimopan after the first post-operative bowel movement. Pharmacy will provide nursing education and will utilize a clinical rule based system to simultaneously follow patients to ensure proper alvimopan discontinuation. This data will be reviewed to compare the total number of doses of alvimopan administered following the first post-operative bowel movement in patient sets utilizing the nurse-driven protocol and those not utilizing the protocol. Clinicians will also evaluate potential cost savings between the control and test groups. Upon completion of the analysis, the data will be interpreted to determine if the protocol can be extrapolated to other colorectal surgeons.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-013

Poster Title: Impact of a standardized protocol on the incidence of phlebitis in patients receiving peripherally infused amiodarone

Primary Author: Kate Adcock, Huntsville Hospital, AL; **Email:** kathryn.adcock@hhsys.org

Additional Author (s):
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Sara Jones
Gregg Knowles

Purpose: Intravenous amiodarone is a class III antiarrhythmic agent used in the treatment and prevention of life-threatening arrhythmias. Though not always feasible, it is recommended to administer amiodarone through a central venous catheter. It has been noted that infusing amiodarone through a peripheral vein commonly results in the complication of phlebitis. Phlebitis can result in patient discomfort, delay in treatment, or the need for additional medical intervention. The purpose of this study is to evaluate the impact of a standardized protocol, which limits the duration of the peripheral infusion, on the incidence of phlebitis in patients receiving peripherally infused amiodarone.

Methods: This retrospective chart review will be submitted to the Institutional Review Board to request exemption from review. The Allscripts EPSi™ Cost Manager will identify patients who received intravenous amiodarone and had a discharge diagnosis of phlebitis or thrombophlebitis. Patients will be reviewed pre- and post- adjustments to a standardized amiodarone infusion protocol which limits the duration of the peripheral infusion to less than twenty-four hours. Data collected for these groups will include: patient age, gender, ethnicity, protocol used, drug dose, type of intravenous access, duration of peripheral infusion, appropriateness of transition, interventions needed, and other possible causes of phlebitis. Following completion of data collection, the current protocol will be reviewed to determine if adjustments are needed. Also, the process for verification in the electronic medical record as well as nursing procedures will be reviewed. Finally, education will be provided to various members of the healthcare team who are involved in this process.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-014

Poster Title: A Clinical and Economic Evaluation of Fecal Microbiota Transplant in a Community Hospital

Primary Author: Brian Boyett, Huntsville Hospital, AL; **Email:** brian.boyett@hhsys.org

Additional Author (s):
Jonathan Edwards

Purpose: Fecal Microbiota Transplant (FMT) has been demonstrated as a highly effective last-line treatment option for patients experiencing recurrent Clostridium difficile infections. Previously, FMT required the physician to find a suitable donor, usually a close relative of the patient, and prepare the stool for transplantation via colonoscopy. A non-profit organization aims to make this treatment more accessible to patients by providing standardized, ready-to-use formulations for providers to more easily perform FMT. The objective of this study is to evaluate the effectiveness and economic impact of commercially available FMT in patients with recurrent C. difficile infections in a large community hospital.

Methods: This study has been submitted for approval by the Institutional Review Board (IRB). The study population will include all adult patients with recurrent C. difficile that have been treated with FMT from 4/1/16 until 12/1/2016 in the hospital or at the hospital-owned outpatient center. Patients will be identified and enrolled by IRB approved infectious disease and gastroenterology physicians after experiencing at least two treatment failures with antimicrobial therapy. FMT will be administered rectally via colonoscopy or orally via capsules. Each patient will be evaluated at eight weeks post-transplant to identify if the patient suffered an adverse event and to determine if the patient experienced a sustained clinical cure. Clinical cure will be defined as the absence of C. difficile associated diarrhea. The economic impact of FMT will be evaluated using historical data collected from the electronic medical record including: C. difficile infection (CDI) rates, CDI readmission rates, CDI associated colectomy rates, cost of admissions and re-admissions, and antibiotic treatment cure rates. This data will be analyzed to determine the potential cost-avoidance FMT will provide for the hospital.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-015

Poster Title: Improving the electrolyte replacement order set process at a large community hospital

Primary Author: Wassamon Viriyakitja, Huntsville Hospital, AL; **Email:** wassamon.viriyakitja@hhsys.org

Additional Author (s):
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Michele Durda

Purpose: Electrolyte management plays a vital role in providing safe and effective patient care. Since the adult electrolyte order set is frequently utilized in the hospital, it is important to evaluate its efficacy and safety for possible process improvements and order set changes. The primary objective of this study is to evaluate phosphorus and potassium repletions, review safety reports concerning electrolyte process, and to recommend order set and process changes based on analysis of collected data.

Methods: This project will be submitted to the Institutional Review Board for approval. The electronic medical record will identify patients who have received phosphorus and/or potassium repletion per the hospital adult electrolyte protocol. The following data will be collected: patient demographics, phosphorus and potassium levels pre- and post-treatment, and type of electrolytes administered. All data collected will be retrospective and de-identified. Data collected will be analyzed for efficacy and safety. Data from the medication error reporting system will also be analyzed to identify problems and areas of improvement. Then, the current protocol will be evaluated based on the data collected and improvements to the process and order set will be recommended for future implementation.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-016

Poster Title: Retrospective evaluation of anti-psychotic medications for the treatment of Intensive Care Unit (ICU) delirium post-ICU discharge

Primary Author: Steven Lee, Huntsville Hospital, AL; **Email:** lee.steven@utexas.edu

Additional Author (s):
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Katie Sims

Purpose: ICU delirium is associated with increased mortality, post-ICU cognitive impairment, and prolonged ICU and hospital length of stay. An ICU delirium protocol is utilized that addresses preventative non-pharmacologic interventions as well as medication treatment regimens for Confusion Assessment Method for the ICU (CAM-ICU) positive patients. However, no current process ensures pharmacologic treatment is discontinued when patient is CAM-ICU negative for 24 hours, discharged from the ICU, or after 10 treatment days. The objective of this study is to evaluate anti-psychotic medication discontinuation practices to improve patient safety and decrease medication costs associated with unnecessarily continued anti-psychotic agents.

Methods: This study will be evaluated by the Institutional Review Board prior to data collection. A retrospective chart review of the past two years will be conducted on patients who had the "Adult Critical Care Sedation, Analgesia, and Delirium" protocol implemented. Patients will be included in the study if anti-psychotic medications (haloperidol, quetiapine, or ziprasidone) were administered during the ICU stay. Data collected will include CAM-ICU results, medication order continuation and administration of ICU delirium anti-psychotic medications post-ICU discharge, whether anti-psychotic medications were prescribed as a continuation of a home medication or as a new anti-psychotic medication initiation, patient death during hospitalization, and prescriber specialties utilizing pharmacologic treatment of ICU delirium. Data collection will not include any patient specific identifiers to maintain confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-017

Poster Title: Evaluation of intravenous immunoglobulin G (IVIG) product use in a large community hospital

Primary Author: Justin Meyer, Huntsville Hospital, AL; **Email:** justin.meyer@hhsys.org

Additional Author (s):
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Adam Sawyer

Purpose: Four possible intravenous immunoglobulin (IVIG) formulations are currently available for use by clinicians in inpatient and outpatient settings in our institution. The objective of this study will be to evaluate the current IVIG product formulary for appropriate usage in regards to cost-effectiveness and patient tolerability and to recommend alterations to current practice if indicated.

Methods: An initial cost and formulary evaluation will be performed to determine if the current workhorse IVIG agent, Gamunex®, is the most cost-effective formulation available. After approval through the Institutional Review Board, a retrospective chart review will be performed on patients receiving IVIG therapy to determine which IVIG products were administered. Patients who received products other than Gamunex® will be evaluated for appropriateness of product selection and eligibility for product interchange. Reimbursement data for both inpatient and outpatient facilities will be evaluated. Adverse event information will be assessed and used to further qualify product appropriateness.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 10-018

Poster Title: Impact of Structured Query Language (SQL)-driven pharmacist medication review on heart failure-related quality measures

Primary Author: Taylor Tran, Mobile Infirmary, AL; **Email:** taylor.tran@ttuhsc.edu

Additional Author (s):
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Purpose: Heart failure has been one of the fundamental disease states since inception of the Core Measures and has prevailed through all subsequent revisions. Unfortunately, the increasing scarcity of resources such as staffing makes it virtually impossible to provide due diligence and evaluate every single patient's medication regimen. Structured Query Language (SQL) queries may serve as useful tool to hone in on patients who are missing pertinent medications. The objective of this study is to implement and evaluate the effect of Structured Query Language (SQL)-driven, pharmacist medication review on heart failure-related quality measures.

Methods: This study will be submitted to the Institutional Review Board for approval. An in-service on heart failure guidelines and core measures will be provided for clinical operations pharmacists (COPs). A designated pharmacist will write a series of Structured Query Language (SQL) statements that will identify the following specific subsets of patients:

- Patients with a principle diagnosis of heart failure and a documented EF of ≤ 35% without an aldosterone antagonist
- Black patients with a principle diagnosis of heart failure and a documented EF of < 40% without hydralazine/nitrate
- Patients with a principle diagnosis of heart failure history and atrial fibrillation without an anticoagulant

Upon 48 to 72 hours of admission, a trained pharmacist will perform a targeted medication review to assess the patient's heart failure regimen and address any potential concerns and/or recommendations. Retrospective chart reviews will determine the effect of this process on the following heart failure-related measures: hydralazine/nitrate at discharge, aldosterone

antagonist at discharge, and anticoagulant prescribed at discharge. The primary outcome will be the American Heart Association's Get With The Guidelines – Heart Failure Quality Measures scores following implementation and the differences in scores pre- and post-intervention rates will be used to examine effectiveness. The secondary outcome will be the number of pharmacist interventions.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-019

Poster Title: Evaluation of precipitating delirium medication and the pharmacist impact through medication management in the ICU; A pilot study

Primary Author: Jessica Smith, Mobile Infirmary, AL; **Email:** jessica.smith@infirmaryhealth.org

Additional Author (s):
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Purpose: Studies have proven that the incidence of delirium can be reduced by more than half when precipitating medication for delirium is avoided. Medication management by the pharmacist can assist in early detection and prevention of delirium. The purpose of this study is to evaluate the utilization of precipitating delirium medication that occur in the medical and surgical intensive care units and implement a pharmacy service to minimize the usage.

Methods: This is a prospective study of patients admitted to medical and surgical intensive care units. A chart review will be performed from March 01, 2016 to September 31, 2016. This collection of data will identify common utilized precipitating delirium medication in the medical intensive care unit and surgical intensive care units. From October 01, 2016- March 31, 2017 the medication review with delirium medication guide will begin. Identified patients that meet the inclusion criteria will be undergo further evaluation by pharmacist. Designated pharmacists working in the medical and surgical intensive care units will be educated on identifying precipitating medications and risk factors for delirium using the medication guide. This guide will provide precipitating delirium medication and alternative medications that can be suggested to physician. Delirium inducing medications will include the following drug categories: opioids, benzodiazepines, and anticholinergics. Selected patients will be monitored upon admission to the ICU and throughout ICU stay. Once the monitoring period is completed, a retrospective look at the number of pharmacist intervention in medication management in delirium precipitating medications.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-020

Poster Title: Evaluation of hospital acquired methicillin resistant staphylococcus aureus (HA-MRSA) infection rates in a surgical ICU setting

Primary Author: Rachel Simons, Mobile Infirmary Medical Center, AL; **Email:** rachelasimons@gmail.com

Additional Author (s):
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Purpose: Decolonization strategies have the potential to decrease rates of infection from methicillin resistant staphylococcus aureus (MRSA) in hospitalized patients. The purpose of this study is to evaluate the current hospital acquired MRSA infection rate in a surgical intensive care unit and determine if this patient population would benefit from implementation of a decolonization strategy.

Methods: This study received approval from the hospital Institutional Review Board. A retrospective chart review will be performed on fifty randomly selected patients admitted to the surgical intensive care unit over a three month time period. All patients admitted to the surgical intensive care unit from May 1, 2015 to July 31, 2015 are eligible for inclusion. There are no criteria that would exclude a patient from this review. Charts will be reviewed for methicillin resistant staphylococcus aureus (MRSA) positive cultures and use of antibiotics with activity against MRSA. Hospital acquired infection will be defined as an infection with onset greater than forty-eight hours from admission to the intensive care unit. Anti-MRSA antibiotics will include: vancomycin, tigecycline, linezolid, daptomycin, or clindamycin. All data will be recorded without patient identifiers and will be maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 10-021

Poster Title: Assessment of the effectiveness of a novel vancomycin nomogram at achieving steady-state trough concentrations of 15-20 mg/L

Primary Author: Cara Bujanowski, Princeton Baptist Medical Center, AL; **Email:** cara.bujanowski@bhsala.com

Additional Author (s):
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Sarah Blackwell
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Purpose: The majority of vancomycin nomograms currently available target trough concentrations of 10-15 mg/L. Guidelines now recommend higher target trough concentrations of 15-20 mg/L to improve penetration, increase the probability of optimal target serum concentrations, and improve clinical outcomes of complicated infections, such as bacteremia, endocarditis, osteomyelitis, meningitis, and hospital-acquired pneumonia caused by S. aureus. This study aims to investigate the effectiveness of a novel vancomycin nomogram at achieving trough concentrations of 15-20 mg/L.

Methods: This is a retrospective chart review of patients aged 18 to 89 who received vancomycin therapy dosed to target trough concentrations of 15-20 mg/L before and after implementation of a vancomycin nomogram dosing protocol. The post-protocol group will include patients dosed per the nomogram with steady-state trough concentrations reported between October 2016-January 2017, and the pre-protocol group will include patients dosed prior to implementation of the nomogram with steady-state trough concentrations reported between October 2015-January 2016. Patients will be excluded if they meet any of the following criteria: receipt of renal replacement therapy, acute kidney injury defined as an increase in baseline SCr by 0.5 mg/dL or 50% in the past 12 months, SCr less than 0.5 or greater than 2 mg/dL, BUN/Cr ratio greater than 40:1, cystic fibrosis, cirrhosis, paraplegia, or quadriplegia. The primary endpoint is the number of patients with steady-state vancomycin trough concentrations between 15-20 mg/L. Secondary endpoints include the number of patients with steady-state trough concentrations between 14-21 mg/L, greater than 20 mg/L, and less than 15 mg/L. Additional secondary endpoints include number of patients within the

following subgroups with steady-state trough concentrations between 15-20 mg/L and 14-21 mg/L: 70 years of age and older, 30 percent or more over ideal body weight, and critical care patients.

Results: N/A

Conclusion: N/A

Submission Category: Leadership

Submission Type: Research-in-Progress

Session-Board Number: 10-022

Poster Title: The management of Staphylococcus aureus bacteremia at Princeton Baptist Medical Center

Primary Author: Mary Stuart, Princeton Baptist Medical Center, AL; **Email:** mkg0006@gmail.com

Additional Author (s):
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Purpose: To assess the management of Staphylococcus aureus bacteremia at Princeton Baptist Medical Center in Birmingham, Alabama as compared to evidence-based standards of care. Following the conclusion of the study, the investigators plan to use the findings to enhance the management of Staphylococcus Aureus Bacteremia at Princeton Baptist Medical Center.

Methods: This study is an observational, retrospective chart review. Charts of non-pregnant adults with at least one Staphylococcus aureus positive blood culture at Princeton Baptist Medical Center from September 1, 2014 to August 31, 2016 will be reviewed. Only initial episodes of bacteremia will be included. Patients will be excluded if they are less than or equal to 18 years of age, have bacteremia secondary to an organism other than Staphylococcus aureus, or if any of the following occur within two days of initial positive blood cultures: death, discharge to another institution, left against medical advice, or deemed palliative. The primary outcome of the study is to determine the percentage of Staphylococcus aureus bacteremia cases managed in full concordance with evidence-based standards of care. Full concordance will be defined as appropriate definitive therapy, repeat blood cultures obtained within two to four days of positive cultures, documentation of sterile blood cultures, appropriate duration of therapy and completion of echocardiography. Secondary endpoints will include the individual components of the primary endpoint and the following: appropriate empiric therapy following positive blood cultures, time to initiation of empiric therapy from positive blood cultures, time to de-escalation (if appropriate) following Staphylococcus aureus sensitivity results, source control, in-hospital mortality, metastatic infection occurrence, infectious disease consultation, and pharmacy consultation.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-023

Poster Title: Development of a delayed erythropoietin stimulating agent initiation protocol in the inpatient setting

Primary Author: Aaron Garrett, Princeton Baptist Medical Center, AL; **Email:** alg0026@auburn.edu

Additional Author (s):
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Rebecca Maxson
Jessica Starr

Purpose: Erythropoietin stimulating agents (ESAs) are used for anemia of chronic kidney disease (CKD) and anemia of chemotherapy. Our formulary ESA is epoetin alpha which is administered thrice weekly. However, there has been an increased use of methoxy polyethylene glycol-epoetin beta which is administered monthly. Varied dosing regimens with different ESAs present a challenge during hospitalization, as outpatient ESA dosing regimens are difficult to determine. This can result in potentially unnecessary doses and more frequent adverse events. The objective of this study is to develop a new ESA prescribing protocol at our hospital to improve safety and reduce costs.

Methods: To determine the current prescribing patterns of ESA therapy at our institution, we will complete a retrospective chart review from October 1st to December 31st 2016. Patients will be identified from an automatically generated daily list of ESA patients. All patients who receive a dose of ESA while in the hospital will be included. The following data will be collected for each ESA dose: indication, dose administered, administration time, hemoglobin level, and blood pressure. Additional data will include ferritin, transferrin saturation, administration of oral or intravenous iron supplementation, and length of hospital stay. Based on the formulary change at nearby Fresenius dialysis units to methoxy polyethylene glycol-epoetin beta, we will compare our data on when ESA doses were given to estimates of when the Fresenius dialysis patients received methoxy polyethylene glycol-epoetin beta to determine if we need to delay ESA initiation for hospitalized patients. From the collected data, an updated ESA protocol will be developed.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-024

Poster Title: Appropriate antibiotic use for acute bacterial sinusitis in the primary care setting.

Primary Author: Jordan Wulz, Samford University, AL; **Email:** jwulz@samford.edu

Additional Author (s):
Katie Boyd

Purpose: The purpose of this project is to evaluate the use of antibiotics in patients with a diagnosis of acute bacterial sinusitis in a primary care setting. The Centers for Medicare and Medicaid (CMS) have developed a Physician Quality Reporting System (PQRS) that allows physicians and physician groups to report quality of care to Medicare. This project will assess if PQRS measure #332 is being met within a primary care physician office. This measure assesses the percentage of adult patients who were prescribed amoxicillin as a first line antibiotic at the time of diagnosis of acute bacterial sinusitis.

Methods: This will be a retrospective chart review assessing the percentage of adults 18 years of age or older who were diagnosed with acute bacterial sinusitis who were prescribed amoxicillin, with or without clavulanate, as a first line antibiotic at the time of diagnosis. Data to be collected includes age, sex, diagnosis, antibiotic prescribed, culture, and subsequent antibiotics prescribed if applicable. This data will be used to analyze the primary outcome (PQRS measure #332) and the secondary outcome of percentage of adults who received amoxicillin as a second-line antibiotic. There is estimated to be 100 patients in this cohort.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-025

Poster Title: Retrospective drug utilization evaluation of intramuscular corticosteroid injections in the outpatient setting

Primary Author: Hanna Sung, Samford University, Jefferson County Department of Health, AL; **Email:** hsung@samford.edu

Additional Author (s):
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Purpose: Corticosteroids are a widely used class of medications, due to its anti-inflammatory and immunosuppressive properties. There are studies that indicate that corticosteroid injections and tablets produce similar efficacy for certain disease states. In the outpatient setting, it is difficult to distinguish whether or not providers are utilizing corticosteroid injections based on evidence-based clinical indications. The purpose of this study is to evaluate the appropriate use of intramuscular corticosteroid injections administered in an ambulatory care setting.

Methods: This study is a retrospective chart review assessing appropriate use of intramuscular corticosteroid injections: methylprednisolone, dexamethasone, or betamethasone, given to patients who are 18 years of age or older at a primary care clinic from July 1, 2015 to June 30, 2016. The following data will be collected: age, sex, insurance status, corticosteroid injected, number of corticosteroid injections per patient throughout the study duration, dose, and indication for corticosteroid. The medication utilization evaluation will identify the indications for use of corticosteroids in the ambulatory care setting based on electronic medical records denoted in providers' chart notes. Based on the indications gathered, a literature review will be conducted to assess whether the indication was evidence-based or not. The primary outcome will be the percentage of patients who had an evidence-based indication for corticosteroids. There will be an estimated 100 patients in the cohort.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 10-026

Poster Title: Assessment of dexmedetomidine use before and after pharmacy led education.

Primary Author: James Carroll, St. Vincent's Health System – Birmingham Hospital, AL; **Email:** james.david.carroll@gmail.com

Additional Author (s):
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Camellia Speegle

Purpose: In February of 2016, a subcommittee of Ascension Health's Therapeutic Affinity Group issued recommendations for the use of dexmedetomidine in the Intensive Care Unit setting. These recommendations were made as a direct result of a 2013 update to evidence-based practice guidelines published by the Society of Critical Care Medicine. The objective of this study is to investigate the proportion of dexmedetomidine use at St. Vincent's Health System-Birmingham before and after education by clinical pharmacists.

Methods: This study will be sent to the Institutional Review Board for approval. The electronic medical record system at St. Vincent's Health System-Birmingham will be used to retrospectively identify patients admitted in the 3 months before and 3 months after the implementation of a targeted education program. This program will consist of educational sessions given to pertinent health care members held by clinical pharmacists. Pharmacists will also disseminate electronic and print guides consisting of Therapeutic Affinity Group recommendations for dexmedetomidine use.
Patients admitted during the pre-specified time frame will be included based on the use of dexmedetomidine, unit location at time of administration, and date of administration. Once selected, de-identified demographic and clinical information will be collected. These data will be reviewed to determine if dexmedetomidine use is in agreement with guideline-based Therapeutic Affinity Group recommendations. An analysis will then be conducted to determine the proportion of patients meeting appropriate use criteria before and after the implementation of the pharmacist led educational program.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-027

Poster Title: Evaluation of pharmacist interventions to improve prescribing of parenteral nutrition in a community hospital.

Primary Author: Bethany Brock, St. Vincent's Health System - Birmingham Hospital, AL; **Email:** bethany.brock@stvhs.com

Additional Author (s):
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Dan Gillis

Purpose: One in every three patients admitted to the hospital are suffering from malnutrition. Hospitalized patients are at risk for developing malnutrition due to the body's increased energy demands or inability to meet nutritional needs. Malnutrition adversely impacts all disease states. Strategies for implementation of nutritional support should be in place to ensure appropriateness and avoid delay of initiation. The American Society for Parenteral and Enteral Nutrition provide guidelines for proper implementation of nutritional support. The objective of this study is to determine the effect of a pharmacy-based intervention strategy on prescribers' adherence to criteria for appropriate indications for parenteral nutrition.

Methods: The study was submitted to the Institutional Review Board for approval. Identification of patients who have been prescribed parenteral nutrition over a course of four months was collected by an electronic pharmacy data-tracking system. The following patient data was collected retrospectively for 100 patient charts using electronic medical record software: demographic information, primary diagnosis, length of hospital stay, number of days on parenteral nutrition, and indicating factors for initiation of parenteral nutrition. All data was maintained confidentially. De-identification tools were used to avoid having any patient identifiers in data analysis. Each patient's data was reviewed and analyzed using Qualtrics software to determine if parenteral nutrition was indicated according to the ASPEN guidelines. An estimated percentage of non-indicated parenteral nutrition orders was determined. As an intervention strategy, implementation of pharmacist-led, prescriber education programs were conducted at in-service meetings, P&T committee meetings, and face-to-face interactions. Furthermore, upon reviewing orders for parenteral nutrition, pharmacists were to evaluate

patient data and determine if the therapy was appropriate or not, based on the indications set forth by the guidelines. In the circumstance of inappropriate or non-indicated parenteral nutrition orders, dialogue between the pharmacist and prescriber occurred to advise on guideline-driven parenteral nutrition initiation. Prospective data collection is occurring and will be analyzed following the pharmacist intervention strategy to determine the percentage of change in appropriately prescribing parenteral nutrition.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-028

Poster Title: Low-dose versus high-dose aminoglycoside use for antimicrobial prophylaxis of type III open fractures

Primary Author: Christine Tafoya, Banner - University Medical Center Phoenix, AZ; **Email:** christinetafoya@outlook.com

Additional Author (s):
Mark Culver

Purpose: In open fractures, cefazolin is frequently the antibiotic of choice for infection prophylaxis. For patients sustaining Gustilo Classification type III open fractures, the Eastern Association for the Surgery of Trauma guidelines recommend the antibiotic coverage be expanded to include gram-negative organisms. While aminoglycosides have historically been selected, optimal dosing strategies have not been determined. The aim of this study is to compare infection rates in patients receiving either (1) less than 5 mg/kg/day ("low-dose") or (2) at least 5 mg/kg/day ("high-dose"). Additionally, factors associated with infection risk will be identified.

Methods: In this Institutional Review Board-approved retrospective cohort study, data will be collected for patients with type III open fractures (Gustilo Classification) receiving either high-dose or low-dose aminoglycosides within the first 24 hours of injury. The primary outcome will be infection rates within 30 days of injury. Demographic data will be collected, and all data obtained will be recorded without patient identifiers. Variables collected with regards to the fracture will include: type, location, mechanism of injury, and surgical management approach. Timing (hours) to first dose of aminoglycoside, surgery, and closure of wound will be recorded. Aminoglycoside choice, duration, initial dose, daily dose (mg/day), and interval will also be recorded. If antibiotics are stopped prior to 72 hours, only the days on antibiotics will be used for categorization. Infection data will include: location, positive culture, organism, day diagnosed from admission, inpatient/outpatient treatment, antibiotic choice, and need for surgical intervention. Follow-up data will be collected utilizing both inpatient and outpatient medical records. Statistical analysis will be performed to determine if a significant difference exists in 30 day infection rate between the two dosing groups. Based on literature review, an infection rate of 7 percent can be considered reasonable with usual dosing. Assuming an

infection rate of 20 percent in the low-dose group, enrollment of 108 patients in each group will be necessary to detect a difference.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-029

Poster Title: Weight-based versus standard vancomycin loading: the effect on 24-hour area under the curve over minimum inhibitory concentration ratio

Primary Author: Jennah DeVoll, Banner - University Medical Center Phoenix, AZ; **Email:** jennah.devoll@bannerhealth.com

Additional Author (s):
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Purpose: Guidelines recommend targeting a 24-hour area under the curve over minimum inhibitory concentration ratio of 400 or greater to predict vancomycin efficacy. Initiating loading doses of 25–30 mg/kg for complicated infections or 20–25 mg/kg for mild–moderate infections is also recommended.The primary purpose of this study is to determine whether there is a difference in the proportion of patients achieving a 24-hour area under the curve over minimum inhibitory concentration ratio of at least 400 between patients receiving weight-based versus standard 1,000 mg loading doses of vancomycin, when vancomycin is maintained by a pharmacist after initiation.

Methods: This is a single-center, retrospective chart review study currently under review by the Institutional Review Board. Investigators will identify patients who have received vancomycin for confirmed methicillin-resistant S. aureus infection using the electronic medical record and vancomycin monitoring forms. The following data for each patient will be collected into a standard, de-identified monitoring form: age, gender, actual and ideal body weight, information pertaining to vancomycin trough results and medication administration, methicillin-resistant S. aureus minimum inhibitory concentration values for vancomycin, 30-day inpatient mortality, comorbidities, infection source, location of admission, alternative methicillin-resistant S. aureus antibiotics used, and Sequential Organ Failure Assessment and Glasgow Coma Scale scores. Investigators will perform statistical analyses to determine if there is a significant difference in the proportion of patients achieving a 24-hour area under the curve over minimum inhibitory

concentration ratio of at least 400 between patients receiving different vancomycin loading dose strategies.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-030

Poster Title: Improving transitions of care for hematopoietic stem cell transplant (HSCT) recipients after discharge

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Additional Author (s):
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Purpose: Hematopoietic stem cell transplantation (HSCT) is often used to treat a variety of disease states, including lymphoma, multiple myeloma, acute myeloid leukemia, and acute lymphocytic leukemia. These patients are discharged with numerous supportive care medications, such as immunosuppressive agents, anti-infective prophylaxis, anti-nausea medications, and other agents for home administration. This patient population is at a higher risk of complications and adverse outcomes in the transition setting between inpatient transplantation and outpatient follow-up care after discharge. The purpose of this study is to evaluate the impact of a pharmacist-led, transitions of care intervention for HSCT recipients between inpatient and outpatient care.

Methods: This study is currently undergoing review by the Institutional Review Board for approval. Patients will be enrolled during their pre-transplant, outpatient work-up for either allogeneic or autologous HSCT. During this pre-evaluation, patients undergo assessment of their adherence risk regarding supportive care therapies, and are educated by the ambulatory oncology clinical pharmacist on their transplant conditioning regimen, anticipated side effects, and supportive care medications. Enrolled participants will receive a monitoring telephone call within 24 hours of discharge from the inpatient bone marrow transplant service. Using a structured call script, researchers will evaluate participant adherence and understanding of discharge therapies, with particular emphasis on anti-rejection and infection prophylaxis medications. Potential medication-related problems, such as improper dosing, side effects, or pharmacy dispensing issues will be documented and assistance provided to attempt resolution of the problems. After completion of the telephone call, a post-intervention survey will be

administered to participants at their first post-transplant care appointment. Additional surveys will also be administered to members of the healthcare team at the cancer center. Descriptive analysis will be used to (1) summarize medication-related problems that occur in HSCT recipients after discharge, (2) summarize patient perceptions of the intervention and its impact on their healthcare and personal satisfaction, and (3) summarize the perceptions of the multidisciplinary hematology/oncology team regarding the impact and utility of the intervention.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-031

Poster Title: Safety of rapid infusion of rituximab in the elderly patient

Primary Author: Eric Vertin, Banner Boswell Medical Center, AZ; **Email:** eric.vertin@bannerhealth.com

Additional Author (s):
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Purpose: Rituximab is a form of immunotherapy used to treat disease states both cancerous and non-cancerous. Infusion-related reactions are common, and rituximab is conventionally administered as a slowly titrated infusion resulting in prolonged infusion times and increased healthcare costs. Rapid infusion protocols with infusion times of 60 or 90 minutes have been shown to be safe and effective in various populations, but evidence supporting the use of rapid infusion rituximab in the elderly is limited. This study will assess the safety of rapid administration of post-first-dose infusions of rituximab in patients aged 65 and older as compared with standard infusion protocol.

Methods: This will be a retrospective cohort study. Institutional Review Board approval for this study is still pending. Data from the medical records of three outpatient infusion centers between January 1, 2014 and September 15, 2016 will be reviewed. Subjects must be 65 years or older to be included and must have received intravenous rituximab for any indication. The following parameters will be excluded: a subject's first lifetime infusion of rituximab, infusions without administration of pre-medications, and infusions during hospital admission. Subjects will be de-identified by the assignment of a study identification number. The primary outcome will be the rate of infusion-related reactions among all rapid infusions and all standard infusions. Infusion-related reaction will be defined as any infusion that was stopped early with the administration of one or more rescue medications, or any abnormal change in vital signs from a baseline measured prior to infusion. Rapid infusion will be defined as any rituximab infusion completed as intended in 120 minutes or less. Standard infusion will be defined as any rituximab infusion completed in more than 120 minutes. The statistical analysis will include the use of generalized estimating equations to compare the rates of infusion-related reactions among all rapid infusions and all standard infusions.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-032

Poster Title: Retrospective, qualitative review of the enhanced care process of the HEART pathway tool in a geriatric population

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Additional Author (s):
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Purpose: The HEART Pathway is a risk stratification tool combining the HEART (history, echocardiogram, age, risk factors, and initial troponin level) score with serial troponin tests. The American Heart Association HEART Pathway Randomized Trial substantiated the real-time applicability and sensitivity of the HEART Pathway in detecting the risk for major adverse cardiac events in patients presenting to the emergency department with symptoms of acute coronary syndrome. The purpose of this retrospective, observational study is to describe the use of the Heart Pathway in patients aged 65 years or older.

Methods: This is a retrospective, observational chart review of patients 65 years or older presenting to the emergency department with chest pain. In addition to demographic data the following risk factors for acute coronary syndrome will be collected from the electronic medical records of selected patients: current smoker, hypertension, hyperlipidemia, diabetes mellitus, family history of coronary artery disease, body mass index greater than 30 kilograms per square meter, previous coronary artery disease, previous cerebral vascular accident, and previous peripheral vascular disease. HEART scores will also be manually extracted from the electronic medical record. For those patients without a recorded HEART score, a score will be retrospectively applied based on the HEART Pathway parameters (history, echocardiogram, age, risk factors, and initial troponin level). The risk category assessed to the patient as determined by the HEART Pathway tool will be compared to the disposition of the patient following the emergency department visit; early discharge, admission to observation unit, inpatient admission for cardiac intervention. Additionally, the occurrence of a major adverse cardiovascular and bleeding events leading to hospitalization within 30 days' post index emergency department visit will be collected and analyzed via hospital system records. Patients

selected for inclusion in the study will be de-identified using a randomly assigned code statement consisting of alpha and numerical values.

Results: Pending

Conclusion: Pending

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-033

Poster Title: Characterization of methylnaltrexone utilization and laxation in the acute care setting

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Additional Author (s):
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Purpose: The primary objective is to evaluate appropriate methylnaltrexone (MNTX) usage by assessing utilization indicators such as documented lack of laxation, nothing by mouth (NPO) status, opioid use and laxative use with dosage escalation prior to MNTX administration. Appropriate dosing regimen based upon renal function and indication (opioid-induced constipation with chronic non-cancer pain, opioid-induced constipation with advanced illness, postoperative ileus) will also be evaluated. The secondary objective is to assess time to laxation after initial MNTX administration.

Methods: An electronic medical record system will identify patients 18 through 89 years of age with orders for MNTX between January 1, 2016 and June 30, 2016. Patients taking MNTX, linaclotide, or lubipristone prior to admission will be excluded. Retrospective review of the patients' medical records will be utilized to collect the following data: age, gender, initial weight, and creatinine clearance, NPO status, time (hours) of last laxation prior to MNTX initiation and opioid usage prior to MNTX (defined as greater than or equal to two doses of scheduled or as needed narcotics in the preceding 24 hours prior to MNTX administration). Additional data will include: stimulant and/or osmotic laxative use and dosage escalation in the 48 hours preceding MNTX administration, MNTX dosage, and time (minutes) to laxation following first MNTX administration. After data collection and analysis, descriptive statistics will be used to characterize patients and utilization indicators. Additional statistical tests will be performed to determine of any correlation exists between utilization indicators and time to laxation.

Results: n/a

Conclusion: n/a

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-034

Poster Title: Validation of anti-factor Xa response in patients with a body mass index greater than or equal to 60 kg/m2 receiving enoxaparin 60 mg twice daily

Primary Author: Charlott Fielding, Banner Desert Medical Center, AZ; **Email:** charlotte.fielding@bannerhealth.com

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Purpose: Banner Desert Medical Center implemented an enoxaparin dosing protocol for morbidly obese patients in 2015. Enoxaparin doses are automatically adjusted to 60 mg subcutaneously every 12 hours in patients with a body mass index (BMI) of greater than or equal to 60 kg/m2. Anti-factor Xa levels are drawn and prospectively evaluated on these patients with a goal target range defined as 0.2-0.5 units/mL. The primary purpose of this project is to validate this dosing protocol in adults with a BMI greater than or equal to 60 kg/m2.

Methods: This study was submitted to the Institutional Review Board for approval. Patients who received enoxaparin 60 mg every 12 hours with a BMI greater than or equal to 60 kg/m2 will be included. Patients will be identified retrospectively who are 18 years of age, admitted from August 1, 2015 to August 30, 2016, were on enoxaparin 60 mg every 12 hours, had a weight greater than or equal to 140 kg, and a creatinine clearance greater than 30 ml/min. Demographic data for age (less 90 years of age), gender, actual body weight at admission, ideal body weight, and BMI will be collected. Collection of outcomes data will include serum creatinine and creatinine clearance at baseline and at time of anti-factor Xa levels draw, deep vein thrombosis risk score, prophylaxis vs treatment indication, level drawn, administration of enoxaparin, anti-factor Xa level within 3-6 hours after 3 or more doses of enoxaparin, lab processing time greater than or equal to 60 minutes, major and minor bleeding, and thrombotic events. Descriptive statistics will be used to report continuous variables as means and standard deviations and categorical variables as percentages. For all tests, p values less than or equal to 0.05 will be considered significant.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-035

Poster Title: Validation of a pediatric vancomycin dosing protocol for patients 12 to 18 years old

Primary Author: Sue Lee-Chuu, Banner Desert Medical Center, AZ; **Email:** sue.lee-chuu@bannerhealth.com

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Purpose: In this community hospital, a pharmacist driven vancomycin dosing protocol was implemented in order to improve the effectiveness of initial vancomycin dosing in attaining therapeutic troughs based on patient's diagnoses. The purpose of this evaluation is to assess the number of adolescent patients between ages 12 to 18 years in whom therapeutic trough levels were achieved using this weight based pediatric vancomycin dosing protocol. This evaluation will also evaluate the number of doses required to reach target trough levels of 10-15 mg/L and 15-20 mg/L in patient population.

Methods: In this Institutional Review Board approved, retrospective study, patients between ages 12 to 18 years who had vancomycin empirically dosed utilizing a pediatric protocol will be evaluated for the number of therapeutic trough levels achieved. This protocol included empiric dosing strategies based on patient's weight, treatment indication, and target trough level. Subjects will be retrospectively identified through electronic medical records. Patients will be included aged 12 to 18 years, were prescribed vancomycin therapy for greater than or equal to 48 hours, empirically utilized the protocol, and had a documented steady-state trough concentration obtained. Patients will be excluded if they received less than 3 doses of vancomycin, vancomycin was initiated at another facility, initial trough concentrations were drawn inappropriately, or if they received hemodialysis or extracorporeal membrane oxygenation (ECMO). Data collection will include: age, gender, weight, height, if a patient was on hemodialysis or ECMO during vancomycin treatment, if trough was drawn appropriately, renal function, empiric dose and interval given, indication for therapy, and target trough. The following outcomes will be analyzed in order to validate this dosing protocol: vancomycin trough levels, whether trough level obtained was therapeutic according to goal, and development of acute kidney injury based on pRIFLE criteria.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-036

Poster Title: Evaluation of the impact of a computerized physician order entry antimicrobial stewardship program targeting linezolid, with and without a lead infectious disease physician

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Additional Author (s):
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Purpose: To compare the appropriate use of linezolid in a community hospital setting using a proactive, computerized physician order entry antibiotic stewardship program (CPOE-ASP) with and without the presence of an infectious disease physician lead.

Methods: A CPOE-ASP addressing the utilization of linezolid was designed for a 305-bed community hospital with a computerized physician order entry system already in place. Physicians ordering linezolid are presented with a dialog window summarizing the current approved usages for linezolid, as well as alternative antibiotics and hyperlinks to evidence-based articles. Utilization of this antibiotic was based on Food and Drug Administration and Pharmacy and Therapeutics Committee approved indications and limited to patients with: 1) treatment failure after at least five days of vancomycin therapy, 2) vancomycin-resistant enterococcus, or 3) history of allergic reaction to vancomycin. Linezolid use for bacteremia, endocarditis, and osteomyelitis is considered inappropriate unless all other treatment options have been unsuccessful. A medication utilization evaluation (MUE) for linezolid over a four month period in 2016 will be performed to assess the appropriateness of linezolid ordering, during which time there was no lead infectious disease physician present. This data will be compared to MUE data over a four month period in 2012 when a lead infectious disease physician was present. Chi squared analyses will be performed to assess statistical significance.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-037

Poster Title: Assessing appropriate albumin use at an academic medical center

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Purpose: Albumin is routinely used throughout the intensive care unit (ICU) and medical floors. Albumin is recommended in certain settings, such as large volume paracentesis and spontaneous bacterial peritonitis (SBP) treatment. However, there is little data proving mortality benefit of albumin as the initial resuscitation fluid over less expensive crystalloids. Depending on the dose and concentration, albumin can be up to one hundred times more expensive than crystalloids. Inappropriate fluid selection can have a large economic impact on institutions. The purpose of this study is to determine the rate of inappropriate albumin prescribing and the direct albumin costs associated with them.

Methods: A retrospective observational study will be performed to assess appropriate albumin use at an academic medical center by reviewing no more than 100 charts. Patients prescribed and administered at least one dose of albumin will have their charts reviewed for inclusion into the study. In addition to determining which units of the hospital utilize the most albumin, the study will also evaluate the appropriateness of albumin use based on Federal Drug Administration approved labeling and national guidelines. The dose and appropriate concentration of albumin based on indication, as well as direct albumin costs will be evaluated. Results from this study will be used to create a pharmacy driven protocol outlining appropriate albumin use to align clinical practice with evidence-based literature and lower the economic impact of albumin, while maintaining the integrity of patient-centered care. Strategies to decrease inappropriate albumin usage may include prescriber education, formulary restrictions, and criteria based ordering.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-038

Poster Title: Effect of pharmacist-led interventions on the inappropriate use of nitrofurantoin in an academic medical center

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Additional Author (s):
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Purpose: The purpose of this study is to determine the prevalence of inappropriate use of nitrofurantoin in an academic medical center. In addition, this study aims to evaluate the impact of a pharmacist-led intervention on hospital readmissions within 30 days as a result of inappropriate treatment with nitrofurantoin.

Methods: This study will include patients who either had an order for nitrofurantoin during their hospital stay or received a prescription for nitrofurantoin upon hospital discharge between October 1, 2015 and February 28, 2017. Patients will be identified through reports created on the electronic health record system. In order to determine prevalence of inappropriate nitrofurantoin therapy upon discharge, a retrospective chart review for each patient identified is conducted by a pharmacist and alternative recommendations are made as appropriate. Nitrofurantoin therapy is documented in the chart as appropriate only when used to treat uncomplicated urinary tract infections, as defined by the Infectious Disease Society of America (IDSA), in female patients with a creatinine clearance of 30 mL/min or greater. To evaluate the impact of pharmacist interventions, pre-intervention data will be collected for nitrofurantoin discharge prescriptions from October 1, 2015 through September 30, 2016. Post-intervention data will be collected from October 1, 2016 through February 28, 2017. A chi square test will be used to compare appropriateness of pre and post-intervention data. Additionally, number of patients readmitted within 30 days for infection that did not improve due to use of nitrofurantoin outside of IDSA guidelines before pharmacist interventions will be compared to rates after implementation of this initiative. Nitrofurantoin use during hospital stay will also be evaluated to determine effectiveness of pharmacist monitoring through documented interventions.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-039

Poster Title: Comparison of safety and efficacy between two different computerized insulin management algorithms in a multi-hospital system

Primary Author: Chelsea Spencer, HonorHealth - Scottsdale Medical Centers, AZ; **Email:** chelsea.spencer@honorhealth.com

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Purpose: Longstanding hyperglycemia is correlated with increased morbidity and mortality. Numerous studies have shown that tight glycemic control reduces these complications, but obtaining this control is associated with increased adverse events. Hypoglycemia, an adverse event related to tight glycemic control, is associated with increased mortality. Studies have shown that computerized insulin protocols are superior to manual or paper calculations. The objective of this study is to compare the safety and efficacy of two computerized insulin management algorithms across a wide variety of populations in a multi-hospital system.

Methods: This study will be submitted to the Institutional Review Board for approval. The primary outcome is rate of hypoglycemia, number of cases with severe hypoglycemia, and any sentinel events associated with hypoglycemia. Hypoglycemia will be defined as a capillary blood sugar < 70mg/dL, with severe hypoglycemia being < 50mg/dL. This will be assessed by D50W, glucose tablet, glucose gel, and glucagon usage from automated dispensing technology reports. All patients receiving one of these agents over 24 hours after admission will be included in the study. Patients receiving these agents within 24 hours of admission are excluded from the study as cause of hypoglycemia is more likely related to admission than because of an insulin protocol. The following data will be collected: patient age, gender, indication for insulin, blood glucose values and time drawn, admission date and time. All data will be recorded without patient identifiers and maintained confidentially. Patients receiving insulin where 3-component, LIIP, or Glucommander® was not utilized will be excluded from the study. The secondary outcome will be time to euglycemia while on an insulin infusion protocol. Time to euglycemia will be determined by hours until attainment of a fasting blood sugar between 140 - 180mg/dL.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-040

Poster Title: Evaluation of procalcitonin utilization and subsequent antimicrobial de-escalation in critically ill patients.

Primary Author: Laura Macaveiu, HonorHealth - Scottsdale Medical Centers, AZ; **Email:** laura.macaveiu@honorhealth.com

Additional Author (s):
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Purpose: Procalcitonin (PCT) levels are being used more commonly to drive clinician confidence of the presence of a bacterial infection in patients with sepsis and/or lower respiratory tract infections. It remains unclear if the results of PCT testing are being used to initiate or guide antimicrobial therapy. The objective of this study is to evaluate whether PCT levels are being utilized correctly based on the health system protocol (namely, the presumed disease state and number of levels ordered) and, when used appropriately, whether the results are used to initiate or de-escalate antimicrobial therapy if possible in critically ill patients.

Methods: This is a retrospective study that will be submitted to the Institutional Review Board for approval. The electronic medical record of two medical centers will be screened for adult patients who were admitted to the intensive care unit (ICU) and had at least one PCT level drawn in the unit. Patients will be excluded if they have chronic kidney disease stages four, five, or are on dialysis. The reviewers will compare the presumed disease state for obtaining a PCT and number of PCT levels on each patient to the health system protocol for appropriateness. The patient will fall into either the appropriate group or the inappropriate group. Screening will continue until 125 patients are identified for the appropriate group. The number of patients in the inappropriate group at that time will indicate how well PCT is being utilized. Data to be collected for the appropriate group includes: age, gender, infectious disease diagnoses, creatinine clearance, number of PCT levels, antimicrobials and positive culture results before and after PCT results, length of antibiotic treatment, and length of stay in the ICU. Data for the inappropriate group includes: number of PCT levels and presumed disease state for PCT level. Of the appropriate group, the reviewers will determine whether PCT results affected the decision to initiate or de-escalate antimicrobials (if appropriate), or did not affect treatment.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-041

Poster Title: Comparison of standard and reduced-dose pegfilgrastim dosing regimens on clinical outcomes in an outpatient clinic

Primary Author: Adam Odeh, HonorHealth Scottsdale Medical Centers, AZ; **Email:** aodeh@email.arizona.edu

Additional Author (s):
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Purpose: Pegfilgrastim is a key component in the recovery of oncology patients after chemotherapy cycles in helping to prevent febrile neutropenia. However, a common side effect of bone pain can be debilitating for some patients, leading some providers to use reduced-dose pegfilgrastim, although limited data exists to support this practice. This project was designed to determine if there are negative clinical outcomes associated with reduced-dose pegfilgrastim regimens versus standard dosing regimens.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic health records will be retrospectively analyzed for all patients who received pegfilgrastim as part of their chemotherapy regimen. Patients will be separated into groups based on whether they received standard dose (6 mg) or a reduced dose (< 6 mg). The following data will be collected: age, ethnicity, type of cancer, dose received, absolute neutrophil counts (ANC), reported bone pain events, current antimicrobial prophylaxis status, infection rates, febrile neutropenia rates, and whether chemotherapy had to be held or delayed. Particular attention will be devoted to whether or not the patients experienced negative clinical outcomes, such as neutropenic fever and/or infection. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-042

Poster Title: Time to target vancomycin trough concentrations in obese patients based on renal function

Primary Author: Linh Duong, HonorHealth Scottsdale Medical Centers, AZ; **Email:** linhyduong@gmail.com

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Purpose: About a third of the US population is obese, but there is a lack of data regarding appropriate antimicrobial dosing for these patients. Vancomycin is one of the most widely used antibiotics in the healthcare setting. Due to its high volume of distribution, safe and effective dosing of vancomycin in obese patients remains a challenge. The objective of this retrospective study is to evaluate how effective the current pharmacist directed vancomycin-dosing protocol is in attaining timely therapeutic trough concentrations without compromising safety in obese patients with varying renal function.

Methods: This study will be submitted to the Institutional Review Board for approval. This retrospective, multicenter chart review is composed of obese adult patients started on intravenous vancomycin therapy dosed by pharmacy from March 1, 2016 to August 31, 2016 admitted at one of three acute care community hospitals within the network. Patients to be included had a target trough of 15-20 mcg/ml and at least one trough drawn appropriately at steady state. Excluded patients will include pregnant, immunocompromised, dialysis patients, or an estimated creatinine clearance less than 30 ml/min, or a change in vancomycin dose prior to obtaining the initial trough. Data to be collected from eligible records include demographics, labs (serum creatinine, creatinine clearance, white blood cell count, max temperature), indication, loading dose if given, initial maintenance dose, frequency, initial trough level and whether it was therapeutic, subtherapeutic, or supratherapeutic, if levels were drawn appropriately, if vancomycin doses were given appropriately, final cultures, the number of days to reach therapeutic range, and duration of therapy. The primary endpoint is the number of days to achieve therapeutic troughs in obese patients based on renal function. Secondary endpoints include: nephrotoxicity rate, frequencies of therapeutic, subtherapeutic, and

supratherapeutic troughs, degree of obesity, and weight based dosing. The above data will be analyzed using descriptive and inferential statistics.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-043

Poster Title: Antimicrobial stewardship intervention: Impact of audit and feedback on inappropriate urine cultures from the emergency department

Primary Author: Larissa Chin, Kingman Regional Medical Center, AZ; **Email:** larissakchin@gmail.com

Additional Author (s):
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Purpose: A major focus of antimicrobial stewardship programs is to improve patient outcomes through appropriate antibiotic use. It is estimated that the majority of antibiotic prescriptions are unnecessary or inappropriate. Antibiotics are often prescribed based on laboratory data without correlating clinical information. An example of this is asymptomatic bacteriuria, where there is a positive urine study without any accompanying signs and symptoms of urinary tract infection. The purpose of this study is to evaluate the appropriateness of urine cultures and antibiotic prescribing through targeted education and audit and feedback in the emergency department (ED).

Methods: This study is a retrospective audit and feedback intervention and will be submitted to the Institutional Review Board. All patients with positive urine cultures ordered through the ED from 10/1/2016 – 4/30/2017 will be identified through the laboratory system. The following data will be collected: age, gender, microbiologic data, signs and symptoms of urinary tract infection (UTI) at time of urine culture, diagnosis, antibiotic prescribed, length of antimicrobial therapy, hospital length of stay (LOS), and Clostridum difficile infection (CDI) within 28 days of antibiotics. Urine culture appropriateness will be based on signs and symptoms of UTI. Patients will be defined as having classic signs and symptoms (dysuria, frequency, urgency, flank pain, hematuria, suprapubic pain or costovertebral angle tenderness on percussion) or vague signs and symptoms (unexplained altered mental status, fever or rigors). On a monthly basis, urine cultures will be reviewed retrospectively for the preceding month and then targeted education and feedback will be given to providers regarding the appropriateness of urine cultures and antibiotic prescribing. The primary endpoint will be number of appropriate urine cultures. Secondary endpoints will be CDI rates, LOS, and antibiotic utilization. The Student's t test will be

used to compare continuous variables. Categorical variables will be compared by Fischer's exact or Chi-squared test. P values of less than 0.05 will be considered statistically significant and all tests will be two-tailed.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-044

Poster Title: Retrospective review of discharge oral anticoagulation therapy for new onset atrial fibrillation at emergency department discharge

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Additional Author (s):
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Jon Glover

Purpose: Anticoagulation plays a key role in stroke prevention for patients with atrial fibrillation (AF). Unfortunately, published literature suggests that emergency department (ED) patients who are not given an anticoagulant prescription upon discharge take longer to be adequately anticoagulated in the outpatient setting. The purpose of this review is to evaluate the frequency of prescribed oral anticoagulation therapy in new onset AF patients at discharge and its effects on outpatient anticoagulation compliance at 3, 6, and 12 months.

Methods: This study has been submitted to the Institutional Review Board for approval. Retrospective chart review will be completed for patients with an ED visit between October 1, 2015 and June 30, 2016 and an ICD10 code for AF. Patients will be excluded if they have a primary diagnosis of atrial flutter or chronic AF, death in the ED, admission to the hospital, discharge to hospice, pregnancy, oral anticoagulant prior to presentation to the ED, or INR ≥ 1.2 upon presentation. The following patient information will be collected through an electronic medical records system and electronic outpatient prescription claims database via Surescripts: demographic data, various comorbidities, CHA2DS2-VASc score, HAS-BLED score, and if a prescription for oral anticoagulation was processed at discharge and 3, 6, and 12 months post discharge. All data will be collected without patient identifiers and be securely stored to maintain confidentiality. The primary outcome of this study will determine the incidence of oral anticoagulation in patients discharged from the ED at 3, 6, and 12 months post discharge. Secondary outcomes will include days lapsed before anticoagulation initiation and if there are

any predictors that effect the prescribing of oral anticoagulants by ED physicians upon discharge from the ED.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-045

Poster Title: Comparison of post-intubation interventions early versus late after rapid sequence intubation (RSI) with rocuronium

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Purpose: When rocuronium is used in combination with etomidate for rapid sequence intubation (RSI), patients are sedated for only a fraction of the time they are paralyzed because of etomidate's short duration of action and rocuronium's long duration. The purpose of this study is to compare the number of sedation interventions between 0 and 30 minutes to those occurring between 60 and 90 minutes after RSI induction with rocuronium. Compare propofol infusion rate at initiation of sedation versus 90 minutes after initiation for patients who had RSI induction with rocuronium.

Methods: This will be a retrospective cohort study that will include patient records from Banner University Medical Center Tucson. Patients will be included if they were intubated in the emergency department between 1/1/2014 and 9/1/2016, received etomidate and rocuronium prior to intubation, and were initiated on propofol and fentanyl infusions within 15 minutes of rocuronium dose. Patients will be excluded if they are less than 18 years old, initiated on midazolam infusion between time 0 and 90 minutes after rocuronium dose, glasgow coma scale of 3 prior to intubation, or if they received any vecuronium or additional rocuronium for up to 90 minutes post-intubation. The main outcome measure is a sedative intervention in addition to initial propofol and fentanyl infusion rates. A sedative intervention will be defined as any one of the following: sedative bolus, sedative infusion rate increase, opioid bolus, opioid infusion rate increase, and haloperidol use. We will not include interventions that occur during initiation of sedation and analgesia. The number of interventions will be categorized based on time intervals with time 0 being the time of rocuronium dose: 0 to 30 minutes (early), 30 to 60 minutes (middle), and 60 to 90 minutes (late). The primary comparison will be the number of

interventions that occurred between the early and late phases. We will target a sample of 100 patients for this study.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 10-046

Poster Title: Joint pharmacist-physician patient visits billing model and its impact on reimbursement

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Purpose: Despite the recognition of pharmacists' cognitive/clinical services such as Medication Therapy Management (MTM) for reimbursement in the past decade, barriers to pharmacist billing continues to exist. Unlike physicians, pharmacists are not reimbursed based on the complexity level of the services they provided but are reimbursed mostly based on the time spent providing services. Consequently, pharmacist reimbursement is mostly limited to level 1 or low complexity equivalence if at all possible. This approach undervalues the reimbursement for pharmacists' clinical services. The purpose of this study is to evaluate the impact of joint pharmacist-physician visits billing model on improving reimbursement.

Methods: At our ambulatory care endocrinology clinic, joint pharmacist-physician visits are implemented and billed by the physicians as per complexity of the services, using Evaluation and Management (E/M) CPT codes. During each typical visit, the pharmacist gathers information, interviews patient, and assesses patients' diabetes regimen, treatment efficacy, adherence, disease/therapy complications, provides diabetes self-management education as indicated, and formulates therapy and monitoring plans. Based on the pharmacist-physician-joint decision-making, a final treatment plan is communicated to the patient. The primary objective of this study is to investigate the impact of pharmacists' contribution to the visits' revenue compared to both the revenue from the time spent by physicians alone, level 1 E/M CPT code, and MTM codes by comparing such reimbursement rates. This retrospective, single center study will be submitted to the University of Arizona institutional review board for approval. It will include all adult patients with diabetes who were seen in joint pharmacist-physician visits from November 2014 to August 2016. Patient baseline characteristics (age, sex,

body mass index), most recent glycosylated hemoglobin (HbA1c) lab test, diabetes type and duration, insulin/insulin pump use, and pertinent comorbidities will be collected. The level of service billed, reimbursement amount in dollars, insurance plan, time spent by pharmacist and physician will be collected. Descriptive analyses will be used to analyze the data.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Clinical Services Management

Submission Type: Evaluative Study

Session-Board Number: 10-047

Poster Title: Implementation of Med-to-Bed Program for Post-PCI Patients Receiving Ticagrelor

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Purpose: In the US, nearly 8 million Americans have a history of myocardial infarction; they are at higher risk for recurrent ischemic events. While treatment is started in the hospital, patients may experience fragmentation during transitions of care. The Med-to-Bed program was designed to improve compliance with an antiplatelet agent after discharge from the hospital. Eligible patients are provided with a complimentary 30 day supply of ticagrelor and bedside education. The aim of this retrospective analysis is to evaluate the impact of the program on readmission rates and mortality in post percutaneous coronary intervention (PCI) patients in a community hospital system.

Methods: This retrospective analysis was performed via electronic chart review. Inclusion criteria included patients who were greater than 18 years of age admitted with an acute coronary event requiring PCI and discharged with ticagrelor at Yavapai Regional Medical Center-West Campus in Prescott, AZ. The cohort was divided into two groups, patients who participated in the Med-to-Bed program and those who were not enrolled in the program. The chart review consisted of patient demographics, admitting diagnoses, and the date ticagrelor was initiated. The primary outcome measure was the rate of readmission within 30 days from initiation of treatment. Secondary outcomes include, 90 day readmission rates, mortality rates and diagnoses and any change in antithrombotic therapy within 30 days.

Results: Patients initiated on the Med-to-Bed program experienced less readmission to the hospital. Within a thirty day period, 10% (n=4) of patients participating in the Med-to-Bed program were readmitted compared to the 27% (n=12) of patients in the control group. No

patients in the Med-to-Bed program expired compared with two patients in the control group. A higher number of patients in the Med-to-Bed program (n=15) compared to the control group (n=7) switched to a different antithrombotic agent thirty days after initiation. The primary reason for changing antithrombotic agents in both groups was attributed to increased shortness of breath.

Conclusion: Patients participating in the Med-to-Bed program had a lower hospital readmission rate than the control group within thirty days of initiation of therapy, as well as lower mortality rate post PCI. The Med-to-Bed program group did have an increased rate of changing antithrombotic therapy after thirty days of initial treatment. The Med-to-Bed program appears to be most beneficial in reducing the rate of readmission to the hospital. Further investigation is clearly warranted.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-048

Poster Title: Evaluation of the use of aztreonam for the use of empiric treatment of infections in a rural community hospital

Primary Author: John Riddle, Yuma Regional Medical Center, AZ; **Email:** jriddle@yumaregional.org

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Purpose: Aztreonam is a beta-lactam antibiotic that is often used in patients who have a reported penicillin allergy. It has been previously shown that the majority of patients with a reported penicillin allergy in fact do not have a true allergy, and those that are allergic to penicillins have a small risk for any cross-sensitivity reaction to cephalosporins. This means we may be empirically giving patients a less effective and more costly antibiotic when it isn't necessary. The purpose of this Medication Use Evaluation (MUE) is to identify inappropriate use of azetreonam at a rural community hospital.

Methods: This MUE is exempt from Institutional Review Board (IRB) approval because it is a quality assurance project that will review patient charts from a 1-year period of July 1, 2015 to June 30, 2016. The researcher will collect data on patient's age, gender, weight, allergies (and reactions), serum creatinine, diagnosis (with culture and sensitivities), history of antibiotic use, days of antibiotic therapy and number of recent hospitalizations. By retrospectively reviewing patient charts, the investigator will determine whether the use of aztreonam was appropriate. Aztreonam use will be deemed appropriate if; the patient has a documented allergy to penicillin or a penicillin derivative and the patient has not received a penicillin or a penicillin derivative since the date of documentation, or if the patient has ever received any cephalosporin without an adverse reaction. Descriptive statistics will be used to describe the number of patients who meet the criteria for appropriate use. Patient information will be omitted from the data collection tool and all data collection sheets will be kept confidential and in a locked cabinet in a locked office. The investigator's findings will be delivered to the Pharmacy and Therapeutics committee at Yuma Regional Medical Center (YRMC) and suggestions will be provided on how to improve the use of aztreonam at YRMC.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-049

Poster Title: Evaluation of the appropriate use of daptomycin in a rural community hospital

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Purpose: Daptomycin is a lipopeptide antibiotic indicated for serious infections with gram-positive organisms such as vancomycin-resistant enterococci and methicillin-resistant staphylococci. Daptomycin is also employed in patients who are intolerant to or experience therapy failure with vancomycin. Given the relatively high cost of daptomycin compared to other antibiotics with gram-positive coverage, its unique mechanism of action and side effect profile, it is important to reserve this medication for proper use. Hence, the purpose of this retrospective medication use evaluation is to determine the appropriateness of current prescribing practices of daptomycin in a rural community hospital.

Methods: Patients who received daptomycin during an inpatient admission at Yuma Regional Medical Center over a twelve-month time period were identified via reports generated by EPIC, the institution's electronic medical record. Patients were evaluated for age, gender, weight, hospital location, pertinent allergies, baseline serum creatinine and creatinine clearance, type of infection, culture and sensitivity findings, daily dose of daptomycin ordered, total number of daptomycin doses and duration of therapy, adverse effects, ordering physician and the presence or absence of an infectious diseases consult. Appropriateness of daptomycin use was determined by documented patient indication, encompassing both type of infection and cultures/sensitivities, dose and antibiotic allergy history. Other data collected during the study will be used to enhance knowledge of current prescribing practices, including the physician services that typically prescribe daptomycin, areas of the hospital that utilize it most often, average duration of treatment and frequency of monitoring for adverse effects, namely creatine phosphokinase (CPK) elevations.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-050

Poster Title: Ketamine versus opioid analgesics for pain control in the emergency department

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Purpose: Ketamine has been utilized as an alternative to traditional opioid analgesics for treatment of acute pain in the emergency department setting. Ketamine may potentially offer a longer duration of pain relief with fewer side effects, including addiction potential, compared to opioids. We conducted a study to determine the effectiveness and safety of ketamine compared to opioids for the relief of pain in the emergency department.

Methods: This non-inferiority cohort study will compare the effect of two pain treatment interventions on pain scores one-hour post initial analgesic doses. The treatment groups will be patients receiving ketamine 25 mg intravenous (IV) bolus doses (followed by 25 mg ketamine infusion doses if needed) and patients receiving traditional opioid analgesic doses (converted to IV morphine equivalents). The primary study endpoint is the number of patients in each group that achieve at least a 50 percent reduction in the pain score on a 0-10 numeric scale at one hour post initiation of treatment. Secondary outcomes are; average difference in pain scores 60 minutes post treatment initiation, adverse event rates, significance of adverse events (serious or non-serious), time to hospital/ emergency department discharge, need for additional analgesia and analgesia doses, and difference in pain score at 120 minutes post initiation of analgesia doses. Inclusion criteria for the trial are; age greater than 17 years, presenting pain score of 5 or greater out of 10 on a 0-10 numeric pain rating scale, at least one dose of IV opioid medication or IV ketamine for pain relief, and documentation of at least one follow-up pain assessment by a numeric pain rating scale. Exclusion criteria for the trial are: intracranial hemorrhage, allergy to ketamine, current pregnancy, or inability to vocalize pain score.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 10-051

Poster Title: Financial impact of pharmacy charge on administration versus charge on dispense in a community hospital setting

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Purpose: In order to maintain hospital revenue and financial viability, it is important to accurately charge patients for administered medications. Most hospital pharmacy departments accrue revenue by either charging when a medication is dispensed or when a medication is administered. Depending on the method of charge capture, revenue may potentially be undervalued or even overvalued. Implementation of a computerized electronic health l record system may allow for more precise charging on administration. This study will examine the financial impact of pharmacy charging on administration compared to charging on dispense in a community hospital setting.

Methods: This study is a non-blinded economic trial. The primary endpoint is average pharmacy department revenue before and after implementation of a new electronic health record system. The secondary endpoints are: change in pharmacy revenue for inpatient and outpatient areas, percent change in total medication scanning compliance, and percentage change in revenue for inpatient and outpatient areas before and after implementation of a new computer system. Revenue information will be obtained from seven monthly computer-generated revenue reports immediately preceding the intervention of the complete electronic health record system and for seven months following the implementation. These reports will be compared to the monthly work load indicators (patient census) and adjusted as needed for each study phase. The correlation between medication scanning compliance and revenue for each study phase will be examined. All revenue in the pre-implementation phase will be adjusted upward by the same whole sale percentage mark-up applied in the post-implementation period. The primary and secondary endpoints will be analyzed using the

Student's t-test while Pearson's correlation coefficient will be utilized to determine the correlation of revenue with medication scanning compliance.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Case Report

Session-Board Number: 10-052

Poster Title: Continuous ketamine infusion for sedation and analgesia in the surgical intensive care unit

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Purpose: The Society of Critical Care Medicine (SCCM) guidelines for the management of pain, agitation, and delirium consider opioid analgesics as one of the mainstay therapies for intensive care unit associated pain. When opioids have been titrated to their maximum tolerated effect, non-opioid analgesics can be considered. The role of glutamate neurotransmission in promoting and maintaining pain states has been studied as a new pathway for analgesia. In the setting of persistent peripheral injury or inflammation, glutamate neurotransmission has been shown to increase, resulting in activation of N-methyl-d-aspartate (NMDA) receptors. Spinal neurons therefore become hyper-responsive to repetitive painful stimulation, which may be clinically observed as hyperalgesia. Ketamine, an NMDA receptor antagonist possesses both analgesic and sedative properties. Although it has not been extensively studied, it has demonstrated a unique opioid-sparing effect that helps to reduce both the overall quantity of opioids administered and the incidence of opioid-related side effects. This report discusses the utility of a continuous ketamine infusion in a 51-year-old woman presenting to our emergency department with a chief complaint of a new onset pain in her right lower extremity. Upon evaluation, the patient's past medical history was significant for methicillin resistant Staphylococcus aureus (MRSA) and Pseudomonas aeruginosa infections to her right lower extremity for which she had surgical debridement and a skin graft placement. Additionally, her social history was significant for polysubstance abuse with cocaine and heroin. Due to the severity of her necrotizing acute soft tissue infection, the patient was taken to the operating room for further excisional debridement. Post-operatively, dressing changes were performed using conscious sedation methods with ketamine 30 milligrams (mg), midazolam 4 mg, as well as a hydromorphone patient-controlled analgesia (PCA) pump. The hydromorphone PCA was set to deliver a loading dose of 0.5 mg, a PCA dose of 0.3 mg (12 minute lock-out) and a continuous infusion of 1 mg/hour. Despite this, the patient's pain was inadequately controlled,

with consistent pain scores of 10 out of 10. A continuous ketamine drip was therefore started at 9 mg/hour. After three days of overlapping therapy, the hydromorphone PCA was adjusted to deliver a PCA dose of 0.5 mg (15 minute lock-out) and a continuous infusion of 0.5 mg/hour. Additionally, her pain scores markedly improved after the initiation of ketamine, ranging between 4 and 6. The ketamine drip was subsequently discontinued and the patient continued to improve clinically throughout her hospital course. The hydromorphone PCA was gradually weaned off and the patient was transitioned to oral opioids prior to discharge. Ketamine is known to cause psychomimetic reactions, such as vivid dreams and hallucinations, however no such effects were reported in this patient. As this case suggests, a continuous ketamine infusion has the possibility to assist in both analgesia and sedation. Although further studies are needed, clinicians should be aware of the non-opioid alternatives available to assist with ICU associated pain.

Methods:

Results:

Conclusion:

Submission Category: Infectious Diseases

Submission Type: Case Report

Session-Board Number: 10-053

Poster Title: Prosthetic valve endocarditis due to Mycobacterium chimaera in a patient following open-heart surgery

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Purpose: This patient case summarizes the importance of increased clinical suspicion for Mycobacterium chimaera (M. chimaera) in patients following open-heart surgery that present with culture-negative endocarditis. There has been a recent increase of case reports of infective endocarditis due to non-tuberculosis mycobacterium. Within the past year, both the United States Food and Drug Administration (U.S. FDA) and Centers for Disease Control and Prevention (CDC) released statements regarding safety concerns for non-tuberculosis mycobacterium infections following open-heart surgery. Studies have shown that contamination of heater-cooler units, which are used to control a patient's blood temperature during cardio-pulmonary bypass, is the likely source of infection. Specifically, a sequevar of the Mycobacterium avium (M. avium) complex, M. chimaera, has been identified in these heater-cooler units worldwide. Our patient was a 68 year-old white male with a significant cardiovascular medical history including atrial fibrillation, third degree heart block status post permanent pacemaker placement, coronary artery disease status-post a coronary artery bypass graft in November 2015, and aortic valve stenosis status-post an aortic valve replacement also performed in November 2015. The patient presented with a 7-week course of low-grade fevers, generalized weakness, and intermittent nausea and vomiting. Routine blood cultures were collected but no causative organisms were identified. Diagnostic imaging via a transesophageal echocardiogram revealed a vegetation surrounding the newly-placed, prosthetic aortic valve. He was initially treated with vancomycin, cefepime and gentamicin for culture-negative endocarditis. After three days of this regimen, his renal function started to decline. By the tenth day, his renal function continued to deteriorate and he required intermittent hemodialysis. Because of the

acute renal failure and persistently negative blood cultures, the antibiotic regimen was consolidated to just ceftriaxone. Additional blood cultures were collected to allow for an extended incubation time to rule out the growth of fastidious organisms. In addition, acid-fast bacilli blood cultures were obtained. The patient also had a further work-up of culture-negative endocarditis that included testing for Bartonella, Coxiella, Mycoplasma, and Legionella, and all testing remained negative. Approximately one month into the patient's hospital stay, the acid-fast bacilli blood cultures demonstrated positive growth. Due to the recent reports of non-tuberculosis mycobacterium and this patient's recent surgical history, there was strong clinical suspicion of prosthetic valve endocarditis due to M. chimaera. The patient was started on an anti-mycobacterial regimen consisting of ethambutol, rifabutin, and azithromycin. The patient was discharged from the hospital two days after the initiation of this regimen and was to follow up as an outpatient. Six days after the detection of a positive blood culture, further speciation of the culture revealed growth of M. avium complex. Additional work-up of the blood cultures at an outside laboratory confirmed the detection of M. chimaera. Because of the increase in case reports and safety concerns with contamination of heater-cooler units, patients who have a history of open-heart surgery and present with symptoms of infective endocarditis should have M. chimaera included in the differential diagnosis of possible causative organisms.

Methods:

Results:

Conclusion:

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-054

Poster Title: Infliximab medication use evaluation in a pediatric hospital.

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Purpose: Infliximab is an anti-TNF monoclonal antibody that has been utilized in various autoimmune disease states such as Crohn's (CD), ulcerative colitis (UC) and rheumatoid arthritis. Rates of incidence for CD and UC are highest in the age group of 15-35, with 20-30% of Crohn's patients diagnosed before the age of 20. From January to July of 2016, Children's Healthcare of Atlanta has infused infliximab to 530 patients, and due to increased incidence rates in adolescent patients this number is expected to rise. A retrospective chart review will be conducted to trend infliximab prescribing to evaluate its use and cost.

Methods: A retrospective chart review will be conducted by generating a report identifying patients who received infliximab between January 2016 and July 2016. Patients administered infliximab will be categorized by outpatient or inpatient use. Information will be collected regarding prescribing patterns, monitoring parameters, reimbursement, and admission rates, as well as time of inpatient infusion in relation to admission and discharge. Data elements collected will also assess other biologics, such as adalimumab, and gastrointestinal medications used prior to infliximab administration and during infliximab therapy to determine appropriate use in relation to these additional agents.

Results: N/a

Conclusion: N/a

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-056

Poster Title: The effects on mortality of etomidate and midazolam used for induction during rapid sequence intubation in septic patients

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Purpose: Rapid Sequence Intubation (RSI) is a process that secures the airway for those who are at risk of aspiration, or have an impending loss of airway. RSI involves successive administration of a rapid-acting induction agent and neuromuscular blocking agent. Common agents used for induction include etomidate and midazolam. It remains controversial if a single dose of etomidate has a significant effect on adrenal suppression and in turn mortality in patients with sepsis. This study will provide insight into the benefits and side effects of etomidate and midazolam for induction in RSI in patients with sepsis.

Methods: This study will focus on examining the safety of etomidate and midazolam for RSI in septic patients through a retrospective chart review of septic patients intubated at Midtown Medical Center.
Inclusion criteria will consist of: age greater than 18 years old, an ICD-10 code pertaining to sepsis with sepsis being confirmed by the presence of at least 2 out of 4 SIRS criteria (temperature greater than 38C or less than 36C, pulse rate greater than 90 beats/minute, respiratory rate greater than 20 breaths/minute or PaCO2 less than 32 mmHg, WBC greater than 12,000mcl or less than 4,000mcl or greater than 10% bands) and the presence of a confirmed infection or strong suspicion of infection resulting in administration of antimicrobial agents; need for RSI, and induction of RSI utilizing etomidate or midazolam. Exclusion criteria will include: patients transferred to other hospitals.
Data to be collected during the chart review: (1) medications for rapid sequence intubation, (2) survival at 28 days, (3) length of ICU stay, (4) duration of mechanical ventilation, (5) length of hospital stay, (6) hydrocortisone use >100mg per day, or equivalent, and (7) baseline

demographics including gender, age, weight, source of infection, maximal SOFA score within 3 days of intubation, septic shock requiring vasopressor therapy.

Results: N/a

Conclusion: N/a

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-057

Poster Title: Retrospective evaluation of pharmacist-initiated albuterol order optimization in an adult asthma population

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Purpose: Asthma is one of the most prevalent chronic diseases, and the annual cost of care in the United States is estimated to be over 50 billion dollars. Many patients require both controller and reliever medications to prevent asthma exacerbations. For various reasons, some patients may manage their asthma inadequately using only a reliever medication, such as an albuterol inhaler, or by seeking emergency medical attention instead of purchasing controller medications. This study aims to evaluate the impact of a pharmacist-initiated intervention to optimize albuterol inhaler orders and reduce overutilization of these reliever medications.

Methods: This retrospective cohort study will be submitted to the institutional review board. The electronic medical record will be used to identify patients that were included in the historical intervention in which pharmacists initiated conversion of albuterol prescription orders for multiple canisters of albuterol inhalers to orders for a single canister without refills for adult patients with persistent asthma. As part of the historical intervention, patients received notification of prescription changes and explicit instructions to seek follow-up with the physician should they need additional refills of albuterol. Patients will be included in the study if there is continuous membership with the sponsoring organization throughout the six month period of review with no more than a ninety-day gap in coverage. Claims data will be used to assess the primary outcome: albuterol utilization before and after the intervention and the secondary outcome: adherence to controller medications in patients before and after the intervention. A sub-group analysis will be performed in the group of patients that request additional refills after the intervention to determine if there is a difference in utilization and adherence. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-058

Poster Title: Evaluation of proactive panel management (PPM) meeting attendance and A1c control

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Purpose: The clinical and economic impact of diabetes have inspired efforts to improve A1c control and close care gaps through proactive panel management (PPM). PPM meetings are a novel multidisciplinary approach consisting of a primary care physician (PCP) and clinical pharmacy specialist or registered nurse. During PPM meetings, PCPs guide clinical decision making for their patient population (panel) with diabetes and an A1c greater than 8% to improve A1c control. This study aims to evaluate the relationship between PCP PPM meeting attendance and the proportion of patients in their panels with an A1c less than 8% after implementation of this initiative.

Methods: A retrospective cohort study to evaluate PCP panels will be performed. Each PCP will be categorized based on the number of PPM meetings he or she attended between May and November 2016 (ie, category 1= attended 1 out of 7 meetings). For each PCP attendance category, the percentage of patients with an A1c less than 8% in each PCP panel at baseline and at the end of the study period will be determined. The median percentage change between these proportions will be determined for each PCP attendance category. Linear regression will be performed to assess the relationship between the median change in proportion of patients with an A1c less than 8% and the number of meetings the PCPs attended. The primary outcome will be the median percentage change in proportion of patients with an A1c less than 8% for each PCP attendance category. Data for this study will originate from the electronic medical record. This study will be submitted to the institutional review board.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-059

Poster Title: Clinical and patient-related outcomes following optimization of interferon beta and glatiramer acetate for multiple sclerosis

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Purpose: Interferon (IFN) beta and glatiramer acetate (GA) are among the first-line disease-modifying therapies (DMT) for relapsing forms of multiple sclerosis. While DMTs have demonstrated improved clinical outcomes, they represent a significant and growing cost for patients and health plan payers. In July 2015, Kaiser Permanente of Georgia (KPGA) implemented an initiative to optimize utilization of DMTs using criteria based on safety, efficacy and cost. Patients receiving IFN beta-1a and GA were reviewed for eligibility. This study aims to compare relapse rates in patients who transitioned to IFN beta-1b compared to patients who remained on IFN beta-1a or GA.

Methods: A retrospective cohort study will be conducted to evaluate outcomes following therapy transition to IFN beta-1b based on established criteria compared to patients who remained on IFN beta-1a or GA. The study will review data between July 21, 2015 and November 30, 2016 for KPGA members 18 years and older receiving IFN beta-1a, GA, or IFN beta-1b for at least nine months. The primary outcome will assess the difference in relapse rate for the two study groups and will be evaluated for significance with the Student's t-test. Secondary outcomes will include differences in adherence to DMT, voluntary membership termination rate, and patient out-of-pocket cost for the two groups. This study will be submitted to the KPGA Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-060

Poster Title: Implementation of a web-based warfarin education tool in an integrated healthcare system

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Naomi Yates

Purpose: Warfarin is a commonly used anticoagulant for the prevention and treatment of thromboembolisms in order to avert thromboembolic events which increase the morbidity and mortality of cardiovascular disease. However, its use is associated with a high risk of bleeding. Employing a multidisciplinary approach, pharmacists in anticoagulation clinics provide patient education and assist physicians with warfarin management. Technological advancements now enable education to be obtained utilizing web-based technology. The objective of this study is to evaluate the change in time pharmacists spend providing initial education to patients started on warfarin pre and post implementation of a web-based educational tool.

Methods: The study is a quasi-experimental, longitudinal prospective cohort. To be enrolled, patients must be referred to the anticoagulation clinic for warfarin management, be over 18 years old, have no cognitive deficiencies, and be initiated on warfarin within the last week. The control arm will receive warfarin education through traditional telephonic means. The interventional arm will receive education through a pharmacist proctored, instructional web-based multimedia educational program. The web-based warfarin tool will include all points of discussion currently provided telephonically for standardization. The primary outcome is to evaluate the change in time pharmacists spend providing initial warfarin education. To assess this change, the following demographic data, patient age and gender, will be collected as well as the following encounter data: number of calls, day of the week of calls, time call initiated, time call ended, and total time of calls. The total time of calls will be divided by the number of calls to determine the average time per call. In addition, the total time spent on initial education calls per day and per week will be tabulated pre and post implementation of the warfarin web-based educational tool. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-061

Poster Title: Impact of sedative choice on clinical outcomes in acute respiratory distress patients requiring neuromuscular blocker infusions

Primary Author: Chelsea Dodd, Memorial Health University Medical Center, GA; **Email:** doddch1@memorialhealth.com

Additional Author (s):
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Michael Melroy

Purpose: The Society of Critical Care Medicine's 2013 Pain, Agitation, and Delirium guidelines make no specific recommendation on sedative choice in patients requiring deep sedation. The aim of this study is to determine which sedative agent, propofol or benzodiazepines, is associated with better clinical outcomes in mechanically ventilated acute respiratory distress patients requiring neuromuscular blocker infusions.

Methods: This single center, retrospective cohort study will be conducted at a 600-bed tertiary care hospital. Patients will be screened if they had an active neuromuscular blocker infusion order in the electronic medical record between May 2015 and March 2017. Patients will be included if they had acute respiratory distress syndrome defined as a ratio of arterial oxygen tension to the fraction of inspired oxygen less than 300 mmHg and bilateral opacities on a chest radiograph or computed tomographic scan. Patients will be excluded if they were minors, pregnant, had documented allergies to propofol or benzodiazepines or neurological disorders, expired less than 24 hours into ICU stay, and if they received the neuromuscular blocker infusion for less than 12 hours or a concomitant ketamine infusion. The primary outcome is percentage of time the bispectral index score was in goal range (between 40 and 60) during neuromuscular blocker infusion. Secondary outcomes include duration of mechanical ventilation, ICU and hospital length of stay, and incidence of in-hospital mortality. Data to be collected includes patient demographics and comorbidities, bispectral index scores, neuromuscular blocker agent used, cumulative dose and duration of use, primary sedative agent used, cumulative dose, equivalent dose to achieve deep sedation range and duration of use, additional therapies required including sedatives, analgesia, steroids and vasopressors, clinical outcomes, and discharge disposition.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-062

Poster Title: Albumin and furosemide versus furosemide for volume overload after initial sepsis resuscitation in intensive care patients

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Additional Author (s):
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Purpose: Intensive care unit (ICU) patients commonly require fluid resuscitation to maintain hemodynamic stability and improve perfusion to vital organs. Aggressive fluid resuscitation can lead to fluid overload and peripheral or pulmonary edema. Achievement of a negative fluid balance is associated with survival. Hyperoncotic (25 percent) albumin plus furosemide is a strategy commonly utilized in our intensive care units to attempt to reduce net fluid balance and resulting edema, but the effectiveness of this strategy is unknown. The objective of this study is to determine if albumin plus furosemide results in a lower net fluid balance than furosemide alone.

Methods: This study will be submitted to the institutional review board for review. A retrospective chart review will be completed on intensive care patients who were diagnosed with sepsis or septic shock and received either albumin and furosemide or furosemide between May 2015 and October 2016. Patients will be included if they received at least two consecutive doses of albumin and furosemide or furosemide after sepsis resuscitation. The following data will be collected: demographic data, admitting diagnosis, comorbidities, suspected source of infection, sepsis or septic shock, ICU location, ICU length of stay (LOS), hospital LOS, in-hospital mortality, duration of mechanical ventilation, fluid intake and output, type of fluids received, serum albumin, creatinine and blood urea nitrogen, albumin and furosemide dosing, other diuretics received, and need for dialysis. The primary outcome will be the difference in net fluid balance between groups five days after diuretic initiation. Secondary outcomes will be: ICU LOS, duration of mechanical ventilation, in-hospital mortality, and cumulative doses received of albumin, furosemide, and other diuretics.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-063

Poster Title: Appropriate use of four-factor prothrombin complex concentrate before and after implementation of point-of-care international normalized ratio testing in the emergency department

Primary Author: Angelique Pereira, Memorial Health University Medical Center, GA; **Email:** ang.pereira4@gmail.com

Additional Author (s):
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Katherine Jones
Kevin Sullivan

Purpose: Point-of-care (POC) international normalized ratio (INR) testing eliminates the delay of waiting for the INR to be processed by the laboratory, which can help guide appropriate dosing of four-factor prothrombin complex concentrate (4PCC) and avoid unnecessary administration of 4PCC in patients who have normal INRs. The aim of this study is to assess the appropriate use of 4PCC before and after implementation of POC INR testing in the emergency department as well as the potential cost savings associated with appropriate use of 4PCC.

Methods: A single-center retrospective review will be conducted through the electronic medical record system to analyze the use of 4PCC before the implementation of the POC INR test. After implementation of POC INR testing, a subsequent retrospective review will be conducted to analyze the use of 4PCC in patients who received the POC INR test. Patients will be included if they are 18 years of age or older, received a dose of 4PCC, and were taking warfarin. The primary outcome is the appropriate use of 4PCC in warfarin patients before and after implementation of POC INR testing. Reviewers will determine the appropriate use of 4PCC based on pre-determined criteria, which are that the INR resulted before 4PCC was ordered and that the dose of 4PCC is based on the hospital's protocol for emergent reversal of anticoagulation. Secondary outcomes include whether or not the INR resulted prior to the 4PCC order, appropriate dose of 4PCC, and cost savings/avoidance from implementation of POC INR testing. The following data will be collected: patient age, gender, ethnicity, weight, date/time of admission to the emergency department, indication of 4PCC, INR prior to and after administration of 4PCC, time of INR collection and result, dose of 4PCC, time 4PCC was ordered

and administered, complications, additional therapies, cost of 4PCC dose administered, and cost of appropriate dose of 4PCC.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-064

Poster Title: Evaluating inpatient treatment of extended-spectrum beta-lactamase isolates in urinary tract infections

Primary Author: Phillip Cole, Memorial Health University Medical Center, GA; **Email:** coleph1@memorialhealth.com

Additional Author (s):
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Purpose: Extended-spectrum beta-lactamase (ESBL) producing microorganisms have become a worldwide concern and have increasingly been associated with poor outcomes. There are several agents commonly used to treat ESBL microorganisms. Carbapenem therapy has been noted as the best treatment against these microorganisms. However, there is limited local, national, and worldwide data to support any clinical decisions on which therapy to use for ESBL urinary tract infections.

Methods: This single center, retrospective cohort study will be conducted at a 600-bed tertiary care hospital using the electronic medical record system. Patients will be screened if they have had a confirmed extended-spectrum beta-lactamase (ESBL) producing microorganism isolate on a final urine culture result. Patients will be included if they are of 18 years of age or older with a confirmed ESBL urinary culture isolate. Patients will be excluded if they were outpatient, pregnant, inmates, or less than 18 years of age. Data to be collected includes patient demographics, comorbidities, antibiotic selection, persistence of fever, length of stay, 30-day readmissions, cost comparison between antibiotic therapy, and mortality. Patient health information will be de-identified.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-065

Poster Title: Impact of pharmacist-led assessment of penicillin allergy histories in adult medical-surgical patients

Primary Author: Joseph Morris, Memorial Health University Medical Center, GA; **Email:** morrijo2@memorialhealth.com

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Purpose: Penicillin allergies limit antibiotic selection considerably as there is fear of cross-sensitivity between penicillins and other beta-lactam antibiotics such as cephalosporins. Prior studies demonstrate that many of these reported allergies are intolerances rather than true hypersensitivity reactions and should not preclude patients from receiving preferred therapy. Further research shows increased hospital days and severe infection rates in this population. These findings exhibit the importance of accurate allergy history in hospitalized patients. The purpose of this study is to determine if pharmacist-led assessment of penicillin allergies can increase the proportion of patients that can safely receive beta-lactams.

Methods: This project includes the pilot of a pharmacist-led penicillin allergy evaluation service and subsequent evaluation of the service. Subjects included in the study are non-pregnant, non-incarcerated adults with a documented penicillin allergy admitted to a medical-surgical unit of a 600 bed academic medical center. Each subject's allergy will be evaluated by a pharmacist to determine the risk for reaction upon receipt of a beta-lactam antibiotic. Assessment will begin in the electronic medical record to determine what details are available on the allergy, if the patient has previously received and tolerated penicillins or cephalosporins, and if the patient is prescribed antibiotic therapy at the time of assessment. The next phase of assessment will include a thorough subjective history collected by the pharmacist from the patient or designated caregiver. The pharmacist will gather details concerning the offending agent, reaction, and tolerability of related agents. Patients determined to be suitable candidates for penicillin skin testing will be initiated on the institution's penicillin allergy testing protocol with patient and physician consent. After assessment, physicians will be informed if patients are deemed to be low risk to begin beta-lactam therapy. The primary outcome will be the proportion of patients determined to be low risk to receive beta-lactams. Additional

outcomes include the days of non-beta-lactam therapy spared and cost difference following pharmacist intervention.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-066

Poster Title: Characterization of pharmacist interaction regarding natural supplement use in the community setting.

Primary Author: Tyler Kiles, Mercer University College of Pharmacy, GA; **Email:** tyler.kiles@gmail.com

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Purpose: Herbal supplements are widely available, but the community pharmacy setting provides a unique opportunity for patients to interact with a pharmacist with specialized knowledge of both prescription and non-prescription medications. The primary endpoint of this study is to identify gaps in initiation of pharmacist counseling regarding natural supplements. Secondary endpoints include: determining the rates at which patients seek pharmacist advice about herbal supplement use, identifying sources of information regarding herbal supplements other than pharmacists, characterizing retail pharmacist perceptions and awareness of resources available regarding herbal supplements, and determining pharmacist barriers to providing counseling on herbal supplements.

Methods: This study will survey a convenience sample of subjects in in the greater Atlanta area in retail chain pharmacy stores, 2 AADE Certified Diabetic Education sites, a multidisciplinary clinic, and community flu shot clinics serviced by the chain pharmacy. The 10-item paper questionnaire will be voluntary, self-administered and validated by expert opinion and pilot testing. The questionnaire will collect the following data: demographic information, disease states, use of common natural supplements, consultation with a pharmacist, and other sources of information regarding natural supplements. No identifiable data will be collected. This investigation will also extend to a survey of retail pharmacists at the participating stores. Pharmacists will be interviewed regarding their herbal supplement education background, confidence in making recommendations related to herbal supplements, knowledge of applicable resources, as well as barriers to initiating herbal supplement counseling. Quantitative and qualitative data collected will be analyzed using descriptive statistics.

Results: I anticipate that the majority of patients are not discussing their herbal supplement use with a pharmacist and are getting their information from other sources. Based on surveyed disease state and medication information, I hope to determine if there are any interactions that may have been prevented by pharmacist intervention. I expect that many pharmacists will discuss 'time' as a barrier to herbal supplement counseling, but I hope to probe more into their personal education and experiences to discern what gaps can be filled.

Conclusion: At the end of this study, it is my aim to provide education and/or propose suggestions to fill the knowledge gaps identified.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-067

Poster Title: Retrospective study of pneumococcal vaccination rates with regards to comprehensive medication review (CMR) completion status, risk factors and comorbidities in the community pharmacy setting

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Additional Author (s):
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Purpose: The purpose of this study is to determine the effect of comprehensive medication reviews (CMRs), corresponding risk factor(s) and comorbidities on pneumococcal vaccination rate.

Methods: The research design is a retrospective case-control study. The study population will include 400 adult patients indicated for pneumococcal vaccination who have filled at least one prescription at a particular grocery store pharmacy in three states since January 2013. Data will be collected via Medication Therapy Management (MTM) platforms, chart review on the pharmacy's electronic prescription medication record system and immunization registries by the principal investigator or co-investigator(s). Data collected includes, but is not limited to: age, gender, medical conditions, prescription medications, vaccinations, CMR status, pharmacist providing CMR, medication adherence and pharmacy. Vaccination rates will be calculated and compared among patients receiving a CMR and not receiving a CMR, a patient's usual staff pharmacist versus a district pharmacist, medical conditions and other factors. Data will be analyzed using an unpaired student's t-test.

Results: To be determined. Patients receiving a CMR are expected to have higher vaccination rates than patients who do not receive this service.

Conclusion: To be determined. This study should determine the effect of CMRs on vaccination rate and likelihood of a patient to receive an indicated vaccination. The study may also determine an association of vaccination rates in patients with certain risk factor(s) or

comorbidities. The conclusions found in this study may identify potential gaps in care based on certain risk factors and potentially identify targets for future strategies to improve pneumococcal vaccination rates.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-068

Poster Title: Adherence to hydroxyurea suspension and rates of hospitalization in pediatric patients with sickle cell disease

Primary Author: Renzo Gonzalez, Mercer-Walgreens, GA; **Email:** gonzalez_rp@mercer.edu

Additional Author (s):
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Purpose: The purpose of this study is to evaluate the relationship between varying levels of adherence to hydroxyurea suspension and rates of hospitalization in pediatric patients with sickle cell disease. The role of hydroxyurea in decreasing vaso-occlussive pain, acute chest syndrome and subsequent hospitalization has been well established in clinical trials. However, there are very few studies that assess the role of adherence with improved outcomes. The primary objective of this study is to assess the relationship between adherence to hydroxyurea and rates of hospitalization. The secondary objective of this study is to assess causes of non-adherence.

Methods: This study will be submitted to the Institutional Review Board for approval. This study is designed as a retrospective, cross-sectional study. The inclusion criteria for this study are patients under the age of eighteen who are receiving hydroxyurea suspension for the treatment of sickle cell disease and have a fill history of at least six months. Eligible patients will be identified using the pharmacy prescription dispensing system. Once identified, the parents or legal guardian will be contacted via phone to ascertain willingness to complete a survey. The survey will consist of sixteen questions that will assess general adherence behaviors and any hospitalizations in the last six months. Upon confirmed disposition, a consent form and survey will be mailed to the address on file. All other data used in this study will be collected retrospectively from pharmacy data. The following data will collected: Patient's age, gender, length of hydroxyurea therapy, and refill dates. To assess the primary endpoint, patients will be divided into two groups (adherent and non-adherent) based on proportion of days covered (PDC), and results from the survey will be used to calculate the number of hospitalizations in the past six months. Results from the survey will also be used to evaluate the secondary endpoint.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-069

Poster Title: Evaluation of oritavancin use at a community hospital

Primary Author: Daniel Co, Northeast Georgia Medical Center, GA; **Email:** daniel.co@nghs.com

Additional Author (s):
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Purpose: Oritavancin is a lipoglycopeptide antibiotic indicated for the treatment of acute bacterial skin and soft tissue infections caused by gram-positive organisms. The prolonged half-life of this agent allows for a course of therapy to be completed with a single dose. In June 2015, oritavancin was added to our formulary as an option for treatment of acute bacterial skin and soft tissue infection to reduce admission and length of stay for this indication. The purpose of this study is to determine if oritavancin is used appropriately at our hospital and to evaluate the impact of that use to the institution.

Methods: In this Institutional Review Board approved study, a retrospective and concurrent chart review will be performed on all patients who have received oritavancin within our health system between June 2015 and December 2016. Information that will be collected for each patient includes age, gender, prior antibiotic use, renal function, indication for oritavancin, prescriber, and admission dates. The primary endpoint will be to determine the indication of oritavancin as defined by criteria for use at our institution. The secondary endpoints will include readmission rates for patients prescribed ortitavancin, and financial impact. Any admission within 14 days of oritavancin administration from our health system will be included in the analysis of readmission rates. Financial impact will be assessed using the cost of drug to the institution compared with an average value for the total cost of hospitalization for treatment of a skin and soft tissue infection.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-070

Poster Title: Transitioning from oral direct acting factor Xa inhibitors to intravenous unfractionated heparin in a community hospital

Primary Author: Jae Yook, Northeast Georgia Medical Center, GA; **Email:** jae.yook@nghs.com

Additional Author (s):
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Purpose: In 2009, our hospital began monitoring intravenous unfractionated heparin (IV UFH) with the anti-Xa assay. With increasing numbers of patients on an oral direct acting factor Xa inhibitor being admitted, a concern has emerged when these patients need to be transitioned to IV UFH. Pharmacokinetic studies have demonstrated that the anticoagulants have a linear relationship with the anti-Xa level but can be very sensitive. This study is designed to assess how patients are managed upon transitioning from oral direct acting factor Xa inhibitors to IV UFH within the hospital.

Methods: The study will consist of two parts. The first part will be a retrospective evaluation of patients 18 years and older transitioning to IV UFH from an oral direct acting factor Xa inhibitor with a baseline anti-Xa level greater than 1. The study period for part 1 will be between January 2016 and June 2016. At least 60 patients will be selected randomly to represent the target population. Exclusion criterion includes patients that are taking the oral direct thrombin inhibitor, dabigatran. The primary endpoint is the time delay in hours when transitioning from oral direct acting factor Xa inhibitors to IV UFH. The secondary endpoint is the number of treatment failures as a result of the time delay when transitioning. Treatment failures are defined as a new development of stroke or venous thromboembolism (VTE) within the hospitalization. The second part will be a concurrent study utilizing an activated partial thromboplastin time (aPTT) based heparin monitoring pilot protocol. Patients with a baseline anti-Xa level greater than 1 and with orders for IV UFH during the period of January 2017 and February 2017 will be evaluated. The resident will recommend the pilot protocol. The same information will be collected as in the retrospective chart review to directly compare the results. The pilot protocol will be updated according to the results and will be finalized for official use.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-071

Poster Title: Pharmacist intervention on the stroke team

Primary Author: Keith Johnson, Philadelphia College of Osteopathic Medicine, GA; **Email:** keithjo@pcom.edu

Additional Author (s):
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Purpose: Tissue plasminogen activator (tPA) remains the only medication proven to positively affect outcomes in the treatment of acute ischemic stroke. The primary objective of this review is to assess the door-to-needle time in patients receiving tPA for the treatment of acute ischemic stroke when a pharmacist is present to mix tPA versus when a pharmacist is not present. The goal door-to-needle time is always less than 60 minutes, which studies have shown improves patient outcomes greatly. The results of this review may bring awareness to the importance of pharmacist participation on the stroke team.

Methods: This study has been submitted to the Institutional Review Board. We will conduct a retrospective chart review utilizing computerized physician order entry and the patient's electronic medical records to gather data on the administration of tPA at Gwinnett Medical Center- Lawrenceville. A report will be run gathering all patients who have received tissue plasminogen activator (tPA) from August 2015 through August 2016. At Gwinnett Medical Center- Lawrenceville an emergency department (ED) pharmacist is present during the hours of 1:30 pm to midnight every day. We will evaluate 25 patients who received tPA with an ED pharmacist present compared to 25 randomly selected patients who received tPA without an ED pharmacist present. Data collection will include emergency department arrival time, tPA administration time, patient's emergency department weight, patient's weight used for tPA dosing, and patient's weight post-admission. Our primary endpoint will be door-to-needle time, defined as the time from when the patient enters the ED to the time tPA is administered. The secondary endpoint that will also be evaluated is the accuracy of the patient's weight that is used to calculate the tPA dose. Following data collection, we will evaluate our results using the Chi-Squared statistical test for nominal data and Student T-test for continuous data.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-072

Poster Title: Appropriateness of statin doses in high risk patients, post-percutaneous coronary intervention (PCI)/coronary artery bypass graft (CABG)

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Additional Author (s):
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Purpose: To evaluate gaps between American College of Cardiology (ACC)/American Heart Association (AHA) cholesterol and acute coronary syndrome (ACS) guideline recommendations and prescribing practices at Gwinnett Medical Center in implementation of high intensity statins in post-percutaneous coronary intervention (PCI)/coronary artery bypass graft (CABG) patients.
The findings of this study will be used to assist in modifying protocols to promote high intensity statin use for secondary prevention of cardiac events in these high-risk patients.

Methods: This study has been submitted to the Institutional Review Board for approval. Conduct a retrospective chart review utilizing CPOE and medical records to gather data on statin selection and doses from July 2016 to August 2016. Patient will be identified using ICD10 coding for coronary artery bypass graft (CABG) or percutaneous coronary intervention (PCI). Data to be reviewed will include patient demographics, statin allergies/intolerances, documented contraindications to statins, medication administration records, procedure performed (CABG or PCI), and discharge medication reconciliation records.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-073

Poster Title: Evaluating the use of phenobarbital for the treatment and prevention of alcohol withdrawal syndrome in acute psychiatric inpatients

Primary Author: Erin Waldee, Phoebe Putney Memorial Hospital, GA; **Email:** ewaldee@ppmh.org

Additional Author (s):
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Purpose: The goal of treating and preventing alcohol withdrawal syndrome is to reduce morbidity and mortality by targeting symptoms associated with central nervous system hyperactivity, including anxiety, irritability, and autonomic disturbances. Benzodiazepines are considered first-line agents for this purpose. Phenobarbital is also utilized in practice, but some clinicians have concerns related to the safety of phenobarbital, including potential drug interactions, long half-life, and oversedation. Such adverse outcomes have not been documented in the literature. The purpose of this study is to identify the prevalence and evaluate the safety and efficacy of phenobarbital use for alcohol withdrawal syndrome in acute psychiatric inpatients.

Methods: This study is a retrospective, pre- and post-intervention observational chart review. The electronic medical record will be used to identify patients at least 18 years old admitted to the psychiatric unit and administered phenobarbital for the treatment or prevention of alcohol withdrawal syndrome. Patients will be excluded if they are pregnant or have recent prior use of barbiturates. The desired sample size is 100 patients. The following demographic data will be collected: gender, age, ethnicity, medical and psychiatric diagnoses, urine drug screen, alcohol level upon admission, alcohol use patterns (number of drinks per day, drinking days per week, length of time of alcohol use, history of alcohol withdrawal symptoms), length of stay, dosage form(s) of phenobarbital used, frequency and size of phenobarbital doses, total cumulative dose. The primary outcome will be change in respiratory rate. Secondary outcome measures will be blood pressure, heart rate, temperature, presence of sedation or altered mental status, changes in signs and symptoms of alcohol withdrawal, administration of additional medications for alcohol withdrawal, need for admission to critical care unit. Patients will also be sub-divided into groups characterized by results of their urine drug screen to identify trends related to the

safety of phenobarbital in the presence of other substances. Descriptive statistics will be used to characterize demographic data, the t-test for continuous data, and the chi-square test for categorical data.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-074

Poster Title: Insulin use and hypoglycemia in hospitalized elderly patients

Primary Author: Quyen Bach, Phoebe Putney Memorial Hospital, GA; **Email:** qbach@ppmh.org

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Purpose: Routine administration of sliding scale insulin is no longer recommended as a primary strategy to treat hyperglycemia in hospitalized patients. Studies have demonstrated the significant improvement in glycemic control in patients treated with basal-bolus insulin versus sliding scale insulin alone and improvement in the adverse effects of hypoglycemia. However, the effect of sliding scale alone or basal-bolus insulin on hypoglycemic events is less well known. Our study investigates the effect of the use of basal-bolus insulin versus the use of sliding scale insulin alone on hypoglycemic events in hospitalized elderly patients. This can ultimately guide inpatient management of hyperglycemia.

Methods: This Institutional Review Board approved retrospective study identified patients 65 years and older, admitted to Phoebe Putney Memorial Hospital who received any type of insulin between April 1, 2016 and June 30, 2016. All data are de-identified, kept confidential, and include demographic information, admitting diagnosis, parenteral nutrition administration, diabetes diagnosis, other diabetic maintenance medications, treatment for hypoglycemia, blood glucose levels, length of stay, mortality and higher level of care required within 24 hours post hypoglycemic events. The primary outcomes of the study are the differences in hypoglycemic events among groups including the average hypoglycemia reading, and the percentage of patients on sliding scale insulin alone. Secondary outcomes include length of stay, mortality, intensive care units transfer, and the glucose reading for the hypoglycemia. Exclusion criteria include pregnancy, patients in the intensive care units (medical, surgical and cardiac), patients who are hypersensitive to insulin and patients who received insulin only for the management of hyperkalemia.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-075

Poster Title: Implementation and evaluation of strategies to reduce catheter-associated urinary tract infections (CAUTI) in patients with critical illness

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Additional Author (s):
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Purpose: CAUTIs, one of the most common hospital-acquired infections, have been associated with increased patient morbidity and mortality and increased hospital costs. Development of a CAUTI team, including an infection control specialist and a pharmacist, was implemented at Atlanta Medical Center (AMC). The objective of this study is to evaluate the impact of this team and a new system of education modules and reminder alerts on CAUTI rates in the surgical and neurological intensive care units.

Methods: The institutional review board approved this prospective cohort study with a historical control. A retrospective chart review of the electronic medical record will be performed to determine baseline CAUTI rates for the surgical and neurological intensive care units (ICUs). The baseline period, serving as the historical control, will include data from September 2015 to February 2016. The prospective phase of the study will be from September 2016 to February 2017. During this time, the CAUTI team will perform the following interventions: healthcare provider education with pre- and post-assessments and daily indwelling urinary catheter (IUC) reassessment reminders. Education will be provided on appropriate indications for IUC use, alternatives to IUCs, and aseptic technique for IUC insertion, maintenance, and removal. The IUC reminder system will involve the CAUTI team contacting the physician or nurse of those patients with an IUC in place for five days or longer. Patients 18 years or older who are admitted to the surgical or neurological ICU in the time frame specified and who have an IUC in place for two or more days will be eligible for inclusion

in the study. The primary outcome of CAUTI rates will be calculated by number of CAUTIs per 1000 urinary catheter days.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Evaluative Study

Session-Board Number: 10-076

Poster Title: Impact of a transdisciplinary opioid-reduction team in the reduction of opioid use in orthopedic surgery patients at a community teaching hospital

Primary Author: Tina Simpson, WellStar Atlanta Medical Center, GA; **Email:** tina.simpson@wellstar.org

Additional Author (s):
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Purpose: Opioid analgesics are the mainstay of postoperative pain management. While opioids have shown to be effective, they can be accompanied by preventable opioid-related adverse events (ORADEs). Multimodal analgesia and other opioid-sparing pain management protocols have been developed with aims to reduce or eliminate opioid use, lower incidence and cost of ORADEs thus leading to faster functional recovery, higher patient satisfaction, and shorter length of stay. The primary objective of this study is to reduce opioid analgesic utilization by assessing the impact of a Transdisciplinary Opioid Reduction Team and academic detailing of orthopedic surgeons on incorporating individualized multimodal pain management practices.

Methods: The Institutional Review Board approved this single-center observational study. Patients 18 years or older admitted to the orthopedic surgery department who had an International Classification of Diseases, Tenth revision (ICD 10) procedure code to undergo total hip arthroplasty or total knee arthroplasty between July 2016 and March 2017 will be studied. The historical control group will consist of patients who had their pain managed according to current standard of care. The prospective intervention group will consist of patients who will receive care after the development and implementation of the Transdisciplinary Opioid Reduction Team, opioid reduction initiatives, and from orthopedic surgeons who have completed academic detailing. All patients will be screened based on defined inclusion and exclusion criteria. Using the electronic medical record, pain management regimen administered perioperativley and up to 48 hours postoperatively will be determined via the medical administration record which includes administration dates, times, doses, and route of

administration. The occurrence of specified adverse drug events will be determined by documentation of a clinician from the progress note as well as ICD 10 diagnosis code. Upon identification of an adverse event, the date, time, and length of stay will also be captured. All activities and outcomes obtained will be recorded as outlined on the approved data collection form. Data will be verified for accuracy by at least two members of the team.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-077

Poster Title: Impact of pharmacist led nursing education on antimicrobial stewardship

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Purpose: The newly released Infectious Diseases Society of America (IDSA) guidelines (2016) for the development of an antimicrobial stewardship program (ASP) support the use of passive educational activities to compliment other stewardship activities. The objective of this study is to evaluate the impact of pharmacist led nursing education on antimicrobial stewardship (AMS) at WellStar Kennestone Hospital between the months of October 2016 and January 2017.

Methods: This study will begin with the development of an education program covering important AMS topics such as: appropriate empiric treatment for common infections, narrowing antibiotic treatment based on microbiology, appropriate durations of therapy, importance of antibiotic timeouts, de-escalation of antibiotics, and criteria for intravenous (IV) to oral (PO) conversion. A pre-test will be developed and administered to gauge the base knowledge of the nursing staff. A post-test will also be given after completion of the education program. The results of the two tests will be compared to determine the level of change in knowledge. The effects of the nursing education program will be evaluated through monitoring of the following data points: changes in antimicrobial consumption and IV to PO conversions. IV to PO conversions will be prompted by nurses via use of nursing communication messages to pharmacy staff who will document the suggested conversion in the electronic medical record as accepted or rejected and provide reasoning for their decisions. If the suggestions are accepted pharmacists will convert the medications from IV to PO per hospital policy. Appropriateness of other nursing activity will be assessed through weekly discussions with the medical staff. Antimicrobial consumption will be directly compared to data collected from the same time

period in the previous year. Changes between the two time frames will be documented as a percent change over time.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-078

Poster Title: Impact of a standardized screening tool to assess potentially inappropriate penicillin allergies for removal from the electronic medical record

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Purpose: Penicillin allergies are among the most commonly reported drug allergies in hospitalized patients. Less than one percent of patients are truly allergic to the penicillin class. Inappropriate reporting of penicillin allergies could result in unnecessary use of second- or third-line antibiotics and increased healthcare costs. The purpose of this study is to identify patients with potentially inappropriate documentation of a penicillin allergy for possible removal from the electronic medical record (EMR), or clarification regarding ability to tolerate cephalosporins or carbapenems. Additionally, to identify candidates for Pre-Pen® testing and evaluate cost savings data resulting from decreased alternative antibiotic use.

Methods: This study has been approved by the Institutional Review Board. This study will be a prospective evaluation of patients admitted to our institution, Monday through Friday only, from October 1, 2016 until a minimum of 200 patients have been evaluated. Patients will be identified and randomly selected via a report designed to detect penicillin allergies. Identified patients who are admitted to non-intensive care units and are at least 18 years of age or older will be interviewed using a standardized screening tool to detect inappropriate penicillin allergy documentation or ability to tolerate cephalosporins or carbapenems. If the penicillin allergy is found to be inappropriate, the patient and attending physician will be notified for removal of the penicillin allergy from the EMR. If the ability to tolerate cephalosporins or carbapenems is identified, but the penicillin allergy cannot be ruled out, the penicillin allergy will be updated with comments regarding potential cephalosporin/carbapenem use. Written informed consent will be obtained from each patient to confirm willingness to participate. The following data will be collected: patient age, gender, prescriber service, allergy type, reaction type, time frame of allergic reaction, current antibiotics at time of screening and indication, if applicable, and

exposure to cephalosporins, carbapenems, or penicillins since allergy was documented. All data will be recorded will be de-identified to maintain confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-079

Poster Title: Aptitute of nasal methicillin-resistant Staphyloccocus aureus (MRSA) screening to rule out MRSA pneumonia

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Purpose: Current guidelines recommend that patients at risk of MRSA pneumonia be treated empirically pending culture results. However, de-escalation can prove challenging given the low yield of sputum cultures. Studies have shown that nasal colonization with MRSA has strong (>95%) negative predictive value with MRSA pneumonia making this test a valuable tool in the decision to de-escalate empiric MRSA coverage. The objective of this study will be to evaluate the ability of MRSA screening to rule out MRSA pneumonia and report the potential reduction in antibiotic treatment days, acute kidney injury (AKI), and cost of implementing a MRSA screening protocol.

Methods: This is a retrospective multi-center cohort study at the Healthcare Corporation of America, MountainStar Division between September 1, 2014 and August 31, 2016. All medical records will be queried to identify patients ≥18 years old, who had MRSA screening performed by polymerase chain reaction (PCR), bacterial cultures (blood, sputum, or bronchoalveolar lavage (BAL)), and had an ICD-9 or ICD-10 pneumonia diagnosis code billed within the study period. Medical records of patients meeting this criteria will then be reviewed for clinical confirmation of pneumonia and the following information: age, sex, pneumonia type, anti-MRSA antibiotic(s) prescribed, days of treatment, and culture data. This information will be maintained confidential and reported without patient identifiers. Patients will be excluded if they did not have clinically confirmed pneumonia or the if nasal screening sample was attained more than one month prior to bacterial cultures for patients presenting from outpatient settings, seven days prior to bacterial cultures inpatient, or more than three days after bacterial

cultures. Primary outcomes will be the sensitivity, specificity, positive predictive value, and negative predictive value of nasal MRSA screening and MRSA pneumonia. Secondary outcomes will include the total number of anti-MRSA treatment days, and the potential reduction in treatment days, vancomycin-induced AKI, and costs that would result from a policy of discontinuing anti-MRSA antibiotics within 24 hours of receipt of negative screenings.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Descriptive Report

Session-Board Number: 10-080

Poster Title: Utilization of a pneumonia-specific antibiotic de-escalation algorithm to guide student pharmacists in providing clinical recommendations

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Additional Author (s):
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Purpose: Inappropriate and unnecessary antibiotic prescribing is common in the intensive care unit (ICU). Antibiotic de-escalation, an Antimicrobial Stewardship Program (ASP) strategy, consists of reducing the duration of broad-spectrum antibiotics by narrowing antibiotic therapy based on microbiological data and clinical improvement. Institutions without established decentralized-pharmacy services and ASPs, such as ours, may find difficulty in ensuring appropriate antibiotic de-escalation and benefit from utilizing student pharmacists as clinical pharmacist extenders. This quality improvement intervention sought to utilize student pharmacists' recommendations to improve antibiotic de-escalation for pneumonia in the ICU.

Methods: A daily electronic health record query of patients admitted to the ICU with a diagnosis-related group code for pneumonia was used to identify potential patients to be included for algorithm development and implementation analysis. Patients included were those over 18 years of age, admitted to the ICU for at least 72 hours, and treated with antibiotics. Patients excluded were those with concurrent complicated urinary tract infections, osteomyelitis, intra-abdominal infections, endocarditis, or skin and soft tissue infections. An antibiotic de-escalation algorithm was developed through literature review of antibiotic use in ICU pneumonia and institution-specific baseline data collected from December 28, 2015 to April 29, 2016. Decision points for the algorithm were determined to be results from methicillin-resistant Staphylococcus aureus nasal swabs and sputum and blood cultures. From May 16, 2016 to September 16, 2016, using the pneumonia-specific antibiotic de-escalation algorithm, students provided antibiotic de-escalation recommendations to the intensivist after review and

approval by a staff pharmacist. Opportunities for antibiotic de-escalation were compared to actual rates of antibiotic de-escalation. Antibiotic de-escalation was considered to be performed if at least one antibiotic was discontinued from empiric therapy or a change of antibiotic from broad to narrower spectrum of coverage occurred within 24 hours of test results.

Results: Eighteen patients were identified and analyzed to determine algorithm decision points and provided pre-interventional data during institution-specific baseline data collection. Ten patients were included in post-intervention analysis. Empiric antibiotic durations were 5.0 days pre-intervention and 3.1 days post-intervention (P equals 0.06) and total antibiotic durations were 6.7 days pre-intervention and 5.4 days post-intervention (P equals 0.29). Multiple other changes occurred at the institution during protocol implementation that may have directly or indirectly impacted the findings. This includes change in director of pharmacy, introduction of a decentralized pharmacist during ICU rounds, ongoing family medicine resident education, and rotation of locum tenens intensivists.

Conclusion: Although not statistically significant, empiric and total antibiotic therapy durations were lower in the post-intervention period indicating improvement in antibiotic de-escalation for pneumonia in the ICU; however significant confounding occurred. Development and implementation of an institution-specific, student pharmacist-driven de-escalation algorithm is a potential method to improve antibiotic de-escalation in ICU pneumonia for institutions that lack decentralized pharmacy services and ASPs and have the ability to utilize student pharmacists as clinical pharmacist extenders.

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 10-081

Poster Title: Development of a pharmacist-provider co-visit-driven opioid pain management protocol in a family medicine residency clinic

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Purpose: Primary care providers are increasingly called upon to provide chronic pain management, improve their opioid prescribing practices, and identify and treat patients with substance abuse. This project was designed to implement an evidence-based chronic pain management protocol in a family medicine residency clinic utilizing a pharmacist-provider co-visit model to 1) improve the performance and documentation of 6 Centers for Disease Control and Prevention recommended process measures, 2) increase provider knowledge of chronic nonmalignant pain management and 3) improve provider attitudes toward treating patients with chronic pain.

Methods: Patients taking chronic opioids will be identified by an electronic medical record query. Chart abstraction will be used to collect demographic information and measure the proportion of patients for which each of the following 6 processes were performed and documented: pain management agreement, state prescription monitoring program review, Patient Health Questionaire-9 assessment, risk abuse and divergence assessments, urine toxicology screening, and formal pain control assessment. In addition, a survey assessing knowledge and attitudes of chronic pain management will be developed and distributed to all clinic providers. Utilizing these data and current guideline recommendations, a pharmacist-provider co-visit-driven protocol will be developed. Patients will be scheduled for a pharmacist-provider co-visit strictly for pain management initially and every 6 months. These visits will consist of performing and documenting the 6 process measures, discussing management goals and need for referrals, monitoring for adverse drug reactions, drug-drug interactions, and

adherence, and making decisions for ongoing opioid therapy. Changes in the 6 process measures and provider knowledge and attitudes will be assessed following protocol implementation.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 10-082

Poster Title: Implementing a pharmacy-driven discharge education service utilizing pharmacy students and residents: a pilot study of the effects on patient satisfaction, understanding, and readmission

Primary Author: Preston Taylor, Kootenai Health, ID; **Email:** pttaylor@kh.org

Additional Author (s):
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Purpose: With healthcare evolving to focus on improving patient outcomes and decreasing costs, there is a need for modern-day health systems to ensure medication continuity across various facets of care. This includes the assessment of patient medication regimen understanding to ensure adherence and, ideally, to prevent readmissions. Research has demonstrated the value and capability of pharmacy students within clinical pharmacy practice. Our objective is to develop a discharge medication education service, administered by pharmacy students and residents, and to assess its impact on patient satisfaction and understanding.

Methods: This study will pilot the implementation of a pharmacy student and resident driven discharge education service at a 254 bed rural community hospital. This service will provide medication education to patients prior to home discharge from the hospital. The cardiology unit will be selected as the primary site of investigation due to the high rate of patient turnover and the number of patients admitted for diagnoses that require significant medication management including myocardial infarction, heart failure, and atrial fibrillation. Education will be overseen by the clinical pharmacist or clinical pharmacy manager until the students' skills are determined to be sufficient. All utilized materials for administering patient education will come exclusively from a predetermined, published source. Additionally, medication lists will be reviewed by students prior to education and any subsequent interventions will be documented. Following the patient encounter, students will document the interaction within the electronic medical record. Outcomes will be primarily assessed as the change in HCAHP question number 16, 17, 24, and 25 pertaining to patient education. Secondary outcomes include patient comprehension , assessed with a modified Self-Administration of Medication Tool; 30 day

readmission rate; and an analysis of perceived student educational benefit, described with a novel likert-scale-based questionnaire. The study will be submitted to IRB-Spokane for review and approval.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-083

Poster Title: Implementing a patient-centered approach for preventing and addressing delirium in dementia patients admitted to a community hospital

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Additional Author (s):

Purpose: The hospital setting presents many challenges for patients with behavioral and psychological symptoms of dementia (BPSD), and currently, there are no psychotropic medications approved for the management of BPSD. Multicomponent interventions combining comprehensive risk factor assessments and non-pharmacological therapies appear to be the most effective strategy in preventing delirium in older patients.
The primary goal of this study is to improve quality of care for dementia patients admitted to the hospital by utilizing a standardized, multicomponent protocol for the management of BPSD.

Methods: This study will be conducted at a 254-bed community hospital and piloted on 2 units, the general medical and cardiology units. Risk factor assessments will be completed on every dementia patient regularly as part of standard care and documentation will be provided by the nursing staff in the electronic medical record. When a dementia patient begins to exhibit changes in behavior, the interdisciplinary care team will utilize a step-wise protocol that will help identify or exclude delirium. Next, it will guide the team through non-pharmacological interventions and therapies. The last step of the protocol will guide the decision making process for choosing a pharmacotherapy option as a last-line intervention for patients who are experience severe, inconsolable distress or become a violent threat to themselves or others. The primary outcome will be the percentage or average use of psychotropic medications for agitation. The secondary outcomes will include the incidence of delirium, assessment of non-pharmacological interventions, length of hospital stay, education provided to family and caregivers, and continuity of care.

Results: N/A - research in progress

Conclusion: N/A - research in progress

Submission Category: General Clinical Practice

Submission Type: Descriptive Report

Session-Board Number: 10-084

Poster Title: Implementation of a pharmacy discharge medication education program and its effect on post-discharge heatlh-care utilization in patients at high risk for hospital readmissions

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Purpose: The aim of this project is to improve patient care through pharmacy-led discharge medication education for a cohort of patients at high risk for hospital readmission. These high-risk patients are likely to have other comorbidities and be on a number of medications. As the pharmacy department is not currently involved in comprehensive discharge medication education, a pharmacy led initiative will likely enhance patient understanding of discharge medication plans. The effect this pharmacy discharge medication education has on 30-day readmission rates and return to ED rates before and after implementation will be evaluated.

Methods: Discharge medication education will be provided by the pharmacy department to the following patients at high-risk for hospital readmissions:
Patients greater than or equal to 65 years old with Medicare insurance, who are admitted to St. Luke's Magic Valley Medical Center and have a primary diagnosis of pneumonia with a secondary diagnosis of COPD, or a primary diagnosis of sepsis with a secondary diagnosis of pneumonia.
Pharmacy personnel will review and provide education on discharge medications, with an emphasis on changes to the medication regimen as compared to what patients were taking prior to admission. Approved medication written information will be given to patients for at least the newly prescribed medications (i.e. those that were prescribed as a part of the hospital stay). Other helpful aids, such as medication calendars, picture representations of medications, and pillboxes, may be given to patients to augment the discharge medication education provided.

As a process improvement project, the discharge medication education program will be evaluated on an ongoing basis in order to ensure optimal implementation.

Results: Results of this project will include: A comparison of 30-day readmission rates and frequency of return to the emergency department before and after implementation; comparison of readmission diagnoses before and after implementation; operational outcomes including percentage of patients who actually received the pharmacy intervention, time spent with each patient, and barriers to successful discharge education; other results may include classes of medications counseled on and cost-savings data.

Conclusion: Implementation of this pharmacy-led discharge medication education program is likely to enhance individual patient understanding of their discharge-medication plan. In turn, this hopefully will lead to better adherence and outcomes for these patients at high-risk for hospital readmission.

Submission Category: Clinical Services Management

Submission Type: Descriptive Report

Session-Board Number: 10-085

Poster Title: Improving the clinical practice of anticoagulation therapy management with warfarin in the inpatient setting at St. Luke's Magic Valley Regional Medical Center.

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Purpose: Despite a long existence and prevalent use of warfarin, safe management of this drug remains a challenge for clinicians due to a narrow therapeutic index and long duration of action. Initial warfarin dosing is based on multiple risk factors and research demonstrates that the same dose should be given for at least two consecutive days before making dose adjustments. There is variability in warfarin initial dosing, as well as how and when dose adjustments should be made by pharmacists. This project will assess the consistency of dose initiation, while also proposing a more systematic guideline for pharmacists to manage warfarin.

Methods: A record of all adult inpatients whose warfarin is managed by the pharmacy will be used to gather data for this project. Patients' specific information such as warfarin dosing, INR labs and its frequency, patients' risk factors, additional anticoagulant medications, other medications, diets, etc., will be collected and taken into consideration to assess the appropriateness of warfarin management. Data gathered from this project will be compared with the American College of Chest Physicians Antithrombotic Therapy and Prevention of Thrombosis guidelines and the University of Washington Medicine Anticoagulation Services. The result from this study will be used to contrive a more consistent standardized guideline for warfarin management at St. Luke's Magic Valley.

Results: This study is still in process, however, its result is expected to identify deficiency in warfarin management and devise a more systematic guideline for use in the hospital.

Conclusion: A more consistent standardized guideline will be helpful in providing a better and easier guidance for pharmacist-managed warfarin in the hospital. Furthermore, it will improve patient outcome, minimize adverse events, and more smoothly facilitate patient transition of care to the outpatient setting once they are discharged from the hospital.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-086

Poster Title: Characterization of hyperglycemic episodes among non-critically ill hospitalized patients within a community hospital

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Purpose: Numerous studies have demonstrated hyperglycemia among hospitalized patients can result in an increase in infections rates, mortality, hospital length of stay, and higher healthcare related expenses. The purpose of this study is to characterize hyperglycemic episodes based on current hospital practices. Results will be utilized to improve existing practices and develop new strategies to improve glycemic control in hospitalized non-critically ill patients.

Methods: This study will be submitted for Institutional Review Board approval. This is an observational, retrospective chart review of non-critically ill patients admitted to medical inpatient units from April 1, 2016 to June 30, 2016 receiving oral anti-hyperglycemics or insulin therapy for at least 48 hours. Medical records will be obtained for all adult patients with hyperglycemic events as defined by blood glucose levels greater than 180 mg/dL. Subjects who are not receiving anti-hyperglycemic therapy prior to admission or during inpatient stay, admitted to medical inpatient floors for less than 48 hours, admitted with diabetic ketoacidosis or hyperosmolar hyperglycemic state, receiving insulin drips or on an insulin pump, and receiving total parental nutrition containing insulin will be excluded. Data to be collected includes: demographic information, inpatient hyperglycemia treatment including medication name, dose, route, frequency, date and time administered or omitted dose, home hyperglycemia medications, point- of-care blood glucose levels, hemoglobin A1c, nutrition status, admitting diagnosis, comorbidities, and use of corticosteroid during hospitalization. All subject data reported will be de-identified and will be maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-087

Poster Title: Effect of pharmacist intervention on glycated hemoglobin in poorly controlled diabetic patients at an internal medicine office

Primary Author: Kathryn Loeser, Columbus Regional Health, IN; **Email:** kloeser@crh.org

Additional Author (s):

Purpose: Pharmacists collaborate with physicians to optimize therapy for diabetic patients. The objective of this study is to determine the impact of pharmacist intervention on glycated hemoglobin in poorly controlled diabetic patients during internal medicine office visits.

Methods: Patients with poorly controlled diabetes such as glycated hemoglobin greater or equal to nine will be identified. All data will be recorded without patient identifiers and maintained confidentially. At minimum, the following data will be collected at baseline before pharmacist intervention: age, gender, glycated hemoglobin, number of diabetes medications, type of diabetes medications, body mass index, diagnosis of hypertension, angiotensin-converting-enzyme inhibitor or angiotensin receptor blocker use, statin use, blood glucose, and number of office visits within the previous three months. At each appointment, the following data will be collected if available: body mass index, number of diabetes medications, diagnosis of hypertension, angiotensin converting enzyme inhibitor or angiotensin receptor blocker use, statin use, blood glucose. At minimum, any of the following interventions may be performed during each pharmacist appointment: dose adjustment, medication addition, medication removal, medication counseling, lifestyle counseling, plan for follow up. Glycated hemoglobin will be collected every three months. After each appointment, the pharmacist will document intervention data using a standardized form. Other outcome data that will be collected if available include hospitalization for diabetes related issue, number of appointments with a pharmacist during study time frame, and number of referrals to a specialist regarding diabetes related diagnoses. The impact of pharmacist involvement in diabetes management will be evaluated based on intervention data and effect on glycated hemoglobin.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-088

Poster Title: Exploring the correlation of insulin use and inpatient hypoglycemic events

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Additional Author (s):

Purpose: Currently, inpatient hypoglycemia rates at the hospital are higher than other hospitals in the state of Indiana. From reviewing previous data collected by the hospital, the morning is the time that most hypoglycemic events occur at the hospital. The objective of this study is to determine if hypoglycemic events between the hours of 00:00 and 09:00 are being caused by a particular insulin regimen, and if so to identify the regimen.

Methods: Patients that had morning hypoglycemic events, while on either formulary insulin glargine or formulary insulin lispro during their stay at the hospital will be reviewed, utilizing the electronic database. Hypoglycemic events will defined as a blood glucose value of less than or equal to 70 mg/dL. The following data will be collected age, gender, the time of last administration of both insulin lispro and insulin glargine, the dose of insulin administered, blood glucose values associated with date and time from the morning prior and morning after hypoglycemic event, diagnosis of type 1 or type 2 diabetes mellitus, glycosylated hemoglobin values (hemoglobin A1C), and diet status. All data collected will be confidential and contain no patient identifiers. This data will be trended to see if morning hypoglycemic events can be attributed to a specific insulin regimen, based on time of insulin administration and time of hypoglycemic event.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-089

Poster Title: Incidence of post-operative atrial fibrillation after implementation of prophylactic amiodarone

Primary Author: Hanna Corey, Community Health Network, IN; **Email:** hcorey@ecommunity.com

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Purpose: Atrial fibrillation is the most common arrhythmia following cardiac surgery occurring in 25 to 50 percent of patients. Various regimens have been studied with amiodarone for the prevention of atrial fibrillation. Historically within Community Health Network, there was no consistent approach to prevent post-operative atrial fibrillation besides beta blockers. However in 2015, a prophylactic strategy utilizing amiodarone was implemented. The objective of this study is to compare the incidence of post-operative atrial fibrillation after implementation of prophylactic use of amiodarone for patients undergoing coronary artery bypass graft surgery and/or valve replacement compared to the incidence before implementation.

Methods: This will be a single center retrospective cohort study. Post-operative atrial fibrillation will be defined as atrial fibrillation lasting 5 minutes or longer that prompted therapy by the sixth postoperative day or discharge, whichever was sooner. Prophylactic amiodarone is defined as 600 mg orally twice daily for two doses prior to surgery; then 400 mg orally twice daily post-operatively until discharge. The inclusion criteria for the study are patients 18 years of age or greater that underwent cardiac surgery and received prophylactic amiodarone from January to June of 2016 compared to control patients from January to June of 2015. The exclusion criteria for the study are patients with active atrial fibrillation at the time of surgery, past medical history of atrial fibrillation, emergency surgery, uncontrolled hyperthyroidism, or receiving any antiarrhythmic drugs with the exception of beta blockers. Secondary outcomes include length of stay and documented adverse effects associated with amiodarone. Additional data to be collected includes: demographics; past medical history; concomitant pre-operative cardiac medications; number and duration of atrial fibrillation episodes; time to post-operative atrial fibrillation; number of days of hospitalization, days in the intensive care unit (ICU), and

days of mechanical ventilation; number of vessels bypassed/valves replaced or repaired; Society of Thoracic Surgeons risk scores; medications used to treat atrial fibrillation if it occurred; and drug interactions with amiodarone.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-090

Poster Title: Comparison of Burst Versus Taper Steroid Dosing in COPD Exacerbations

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Purpose: For chronic obstructive pulmonary disease (COPD) exacerbations, the Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines recommend treatment with 5 days of prednisone 40 mg to improve outcomes. The objective of this study is to assess 30 day readmission rates based on prescriber practices of either steroid taper dosing versus sustained, burst steroid dosing.

Methods: This study is pending Institutional Review Board approval. A retrospective, observational chart review will be performed at Community Health Network in Indianapolis, Indiana. Patients eligible for inclusion will have been admitted to Community Health Network with a primary diagnosis of acute exacerbation of COPD. Additionally, patients must be between the ages of 18 and 89 years of age and discharged on a systemic corticosteroids (SCS). Patients will be excluded if they are pregnant, a prisoner, discharged to hospice, expire on initial admission, or have a history of asthma.
Data collected will include: age, gender, smoking history, initial hospital length of stay, hospital of admission, patient location, comorbidities, home COPD medications, medication changes at discharge, doses of SCS used, antibiotics given, supplemental oxygen, readmission in 30 days from discharge, number of days until readmission, primary diagnosis at readmission, and death within 30 days.
Burst therapy will be defined as not more than one decrease in steroid dose throughout admission and discharge prescription. A SCS regimen will be considered a taper if the dose of SCS is changed more than once throughout the course of the admission and upon discharge. Statistical analysis will be used to compare if a significant difference exists between readmission rates based on type of steroid regimen prescribed.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-091

Poster Title: Incidence and clinical outcomes of unintended discrepancies in warfarin discharge orders

Primary Author: Lindsay DeWind, Community Health Network, IN; **Email:** ldewind@ecommunity.com

Additional Author (s):
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Purpose: Warfarin is a commonly prescribed anticoagulant with many dosing complexities due to variable patient response, a narrow therapeutic index, and drug interactions. Due to this, Community Health Network implemented a protocol allowing pharmacists to automatically manage adult inpatient orders for warfarin. However, upon patient discharge, it is the physicians' responsibility to reconcile the dosing. The objective of this study is to determine the percentage of patients discharged on warfarin with an unintended discrepancy in warfarin dosing. If necessary, the information collected will be used to propose a collaborative drug practice agreement allowing pharmacists to prescribe a warfarin regimen at discharge.

Methods: A retrospective chart review will be conducted within the Community Health Network hospitals. Eligible patients for the study will be identified through a report of patients using a Community Health Network-affiliated anticoagulation clinic with an admission into one of the four hospitals between July 1, 2015 and June 30, 2016. Patients may be newly initiated on warfarin or continued on warfarin from home during the hospitalization. Patients will be excluded if they are in a protected patient population, have an INR goal of anything other than 2-2.5, 2-3 or 2.5-3.5, were prescribed short term warfarin therapy (less than 2 weeks), were hospitalized for less than 2 days, or did not have a follow-up anticoagulation clinic appointment within 2 weeks of discharge. The following data will be collected: patient age, sex, primary admission diagnosis, Charlson Comorbidity Index, admitting hospital, discharging unit, indication for warfarin, chronic home medication or new start for warfarin, INR at discharge, discharge warfarin dose recommended by the pharmacist, discharge warfarin dose written by prescriber in discharge summary, type of discrepancy, location of pharmacist dosing recommendation in the chart, day of the week discharged, INR at first follow-up

anticoagulation clinic appointment post-discharge, number of days until anticoagulation clinic appointment after discharge, readmission event, and outcome of readmission.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Descriptive Report

Session-Board Number: 10-092

Poster Title: Development of screening criteria to assess appropriateness of outpatient DVT treatment in ED patients.

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Purpose: Evidence-based clinical practice guidelines recommend that patients with acute deep vein thrombosis (DVT) for whom "circumstances are adequate" be treated at home rather than in the hospital. There is no protocol at Community Health Network (CHNw) to identify candidates for outpatient treatment of DVT. The development and implementation of such a protocol represents an opportunity to avoid unnecessary hospitalization, sparing patients from nosocomial exposures and improving satisfaction. Additionally, projected cost savings based on retrospective application of the screening criteria may justify addition of a new emergency department (ED) pharmacist position to advocate for outpatient treatment of appropriate patients with DVT.

Methods: This study will be submitted to the Institutional Review Board for approval. It will be conducted in three sequential phases: compilation and vetting of screening criteria, evaluation of criteria through retrospective chart review and quantification of potential cost savings, and implementation and operationalization of criteria within an ED-based screening protocol. In the first phase, criteria to identify individuals qualifying for outpatient treatment of DVT were developed through collaboration with content experts and stakeholders across CHNw. This was accomplished by examining and adapting high-quality primary literature and similar procedures in place at other institutions. A preliminary search was performed using the indexing and abstracting services PubMed and Ovid MEDLINE with terms "venous thrombosis", "ambulatory care", and "anticoagulants." Pertinent results were individually examined to assess criteria used either for exclusion from study eligibility for safety purposes or exclusion from outpatient treatment study arm. Consensus criteria across resources were automatically included, while

discrepancies were resolved using a simple majority rule. The criteria were then compiled and end user feedback was solicited for improvement and refinement.

Results: A total of 17 resources were reviewed for criteria to determine appropriateness of outpatient DVT treatment. Primary literature included review articles, randomized controlled trials, and cohort studies. Internal and public documentation of similar screening protocols in place at a large health maintenance organization and academic medical center, respectively, were also analyzed. Prescribing information for individual anticoagulant agents was referenced for safety information. Exclusion criteria derived from these resources were distributed into five categories: significant organ dysfunction, high risk of bleeding or clotting, high risk venous thromboembolism characteristics, hemodynamic instability, and abnormal pharmacokinetic parameters. A detailed description of measureable parameters associated with each criterion as well as a sample screening tool was distributed to ED personnel, including pharmacists and physicians, for comment. Following the vetting process, appropriate revisions were made and the criteria assembled into a data collection form.

Conclusion: Screening criteria to assess eligibility for outpatient treatment in ED patients diagnosed with DVT were compiled from evidence-based exclusions utilized in primary literature and current practice, then vetted through a multi-disciplinary review process. These criteria can now be assessed in phases two and three of this study. By developing, evaluating, and implementing a protocol to assess appropriateness of outpatient DVT treatment in ED patients, CHNw can at once improve patient care and reduce costs.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-093

Poster Title: Implementation of a pharmacist-driven, emergency department culture review in a community hospital

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Additional Author (s):
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Purpose: Knowledge of evidence-based regimens, drug interactions, and formulary options as well as the ability to collaborate with patients and healthcare providers equip pharmacists for involvement in emergency department (ED) clinical functions, such as antimicrobial stewardship programs. Previously published studies have shown these programs decrease ED visits and 30-day readmission rates while reducing the time to positive culture review. Larger-scale impact on the hospital system can be observed secondary to minimized resistance development and improved resource utilization. The primary objective of this study is to compare and contrast readmission rates, process time, and antibiotic appropriateness between a nursing-driven and pharmacist-driven process.

Methods: A retrospective case-control study with Institutional Review Board approval is planned comparing pre- and post-implementation of a pharmacist-led emergency department microbial culture review process. Eligible patient will be identified through an a computerized decision-support program which will include patients from June 1, 2016 through August 31, 2016 and October 1, 2016 through December 31, 2016 for the pre- and post-implementation groups, respectively. Included patients will have been treated in the study hospital's ED and had a urine culture drawn that resulted positive in the study timeframe. Excluded patients were those who were admitted inpatient or observation; those less than 18 years of age or greater than 89 years of age; and those with protected status. The following data will be collected: patient demographics; ED diagnosis; antibiotic allergies; cultured species and sensitives; antibiotic prescribed at discharge; time from positive culture to intervention by staff member; intervention required, if necessary; and ED visits or hospital admissions within 8 weeks. Data

from the two study groups will be compared to identify any differences in readmission rates, process time, and antibiotic appropriateness.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-094

Poster Title: Analysis of four-factor prothrombin complex concentrate use in a community hospital setting

Primary Author: Kristine Manlimos, Community Healthcare System - Community Hospital, IN; **Email:** kristine.manlimos@gmail.com

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Purpose: Four-factor human prothrombin complex concentrate (PCC) was approved in 2013 for urgent reversal of acquired coagulation factor deficiency induced by warfarin, a Vitamin K antagonist, in adults with acute major bleeding. Four-factor PCC is currently available at Community Healthcare System (CHS), however restrictions have been placed on its usage. This review is the first evaluation of current prescribing practices since its addition to the formulary in September 2013. The purpose of this review is to evaluate the utilization of four-factor PCC at the three hospitals within CHS by analyzing the appropriateness of prescribing practices in relation to current institution-specific restrictions.

Methods: In this retrospective review, any patient within CHS who received at least one dose of four-factor PCC within July 1, 2013 to June 30, 2016 will be included and evaluated in this study. The primary endpoint is the appropriate usage of four-factor PCC in the hospital based on current restrictions: Symptomatic warfarin-related intracranial hemorrhage with INR greater than 1.5 or severe to life-threatening bleeding with a reasonable attempt at a Hematology consult. Secondary endpoints include the use of multiple doses of four factor PCC, appropriateness of dosing, use of four-factor PCC to reverse warfarin versus non-warfarin-related bleeding, time between order verification and medication administration, and cost effectiveness in terms of whole vial utilization. Primary safety endpoints include the incidence of complications from four factor PCC, including thrombotic events, or use in patients with or the development of contraindications to use (hypersensitivity to PCC or any of the formulation components, including factors II, VII, IX, X, protein C and S, antithrombin III, human albumin, disseminated intravascular coagulation (DIC), or heparin-induced thrombocytopenia (HIT)).

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-095

Poster Title: Compliance with a tbo-filgrastim protocol via a drug use evaluation in a community hospital setting.

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Purpose: Current recommendations restrict the timing of tbo-filgrastim administration in order to promote optimal patient response to therapy. A formulary restriction protocol was initiated within the Community Healthcare System to ensure proper utilization of tbo-filgrastim. Therefore, a retrospective review of tbo-filgrastim utilization was conducted in order to evaluate compliance with the protocol and facilitate optimal patient outcomes in a community hospital setting.

Methods: Electronic health records will be analyzed for appropriate use of filgrastim/tbo-filgrastim. Any patient receiving tbo-filgrastim will be included in the study. Patient records will be analyzed to determine if tbo-filgrastim is being properly restricted to primary and secondary prophylaxis in malignancy and appropriately administered and discontinued.
Primary prophylaxis in malignancy was defined as 1) use with all high risk chemotherapy regimens with greater than 20 percent risk for febrile neutropenia and 2) potential use with intermediate risk chemotherapy regimens with 10 to 20 percent risk for febrile neutropenia per National Comprehensive Cancer Network guidelines. Patients with an intermediate risk should be administered tbo-filgrastim based on an evaluation for patient specific risk factors: age greater than or equal to 65 years, poor performance status, preexisting neutropenia, previous chemotherapy, previous radiation therapy, bone marrow involvement with tumor, infection/open wounds, recent surgery, poor renal function, and/or liver dysfunction (increased bilirubin). Secondary prophylaxis in malignancy was defined as use in patients with prior neutropenic complications: febrile neutropenia or treatment delay and/or chemotherapy dose reduction due to neutropenia. Appropriate administration of tbo-filgrastim was considered defined between 24 to 72 hours of receiving chemotherapy. Appropriate discontinuation of

tbo-filgrastim was defined as once a patient's ANC was either less than 2000 cell/mm3, less than 5000 cell/mm3, or per physician discretion.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-096

Poster Title: Strengthening of pharmacy clinical services in the neonatal intensive care unit

Primary Author: Kate Allen, Deaconess Health System, IN; **Email:** kate.henderson@deaconess.com

Additional Author (s):

Purpose: To serve as a successful level III neonatal intensive care unit (NICU), it takes a strong multidisciplinary team that encourages learning and growth. In the NICU, our pharmacists currently have a role in standard pharmacy practice and consults for pharmacokinetic services in complex patients. The need for clinically-focused pharmacists is evident in order to maximize the role of pharmacists in this area. When serving as a clinical pharmacist in the NICU, it opens opportunities to have a larger role during rounds, prevent medication errors, optimize medication management, and serve as the medication expert for drug-related questions.

Methods: To further educate the pharmacists currently working in NICU operations, strategies and tools will be developed to enhance their ability to make interventions confidently. Complete and concise medication lists with dosing information will be provided to all pharmacists, as well as pertinent pharmacokinetic information. An improved rounding tool will be prepared in order to assist the clinical pharmacist during rounds, providing guidance on common interventions that can be made. To provide a standard of practice, a clinical competency program will be developed. This program will target common disease states found in the NICU, as well as patient cases with pharmacokinetics and dosing questions. After all pharmacists who practice in the NICU complete the program, a survey will analyze their confidence in making NICU interventions and recommendations.

Results: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Conclusion: Results and conclusions will be presented at the Great Lakes Pharmacy Resident Conference.

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-097

Poster Title: Development of an oncology symptom management clinic

Primary Author: Jennifer Dueker, Deaconess Health System, IN; **Email:** jennifer.dueker@deaconess.com

Additional Author (s):

Purpose: Oncolytic therapy is associated with a myriad of adverse drug events that often result in patients seeking emergency medical attention and hospital admissions. The purpose of this project is to determine the most common reasons oncology patients go to the emergency room after receiving chemotherapy and, in collaboration with the oncology physicians, manage these symptoms per developed protocols and ultimately prevent similar occurrences in the future.

Methods: Data collection includes patients with both outpatient chemotherapy infusions and emergency room encounters over the past six months. Chart reviews will be performed to determine the most common causes of emergency room visits or hospital admissions in this patient population after receiving treatment with chemotherapy. Expected diagnoses include dehydration, febrile neutropenia, mucositis, hand-and-foot syndrome, nausea and vomiting, and pain management. With this data, protocols will be developed and a collaborative agreement will be established with the oncology physicians allowing for the management of these adverse drug events by pharmacists per best practice guidelines. Patient education is also a large portion of this project and will play a vital role in symptom management and in preventing future emergency room visits. Both new and established patients will be addressed. Utilizing associated MD Anderson oncology resources, pharmacists will educate these patients on pertinent information related to their cancer treatment and alert them to potential side effects. Additionally, discussion regarding specific plans with the patient and the patient's oncologist regarding treatment may help to prevent unnecessary trips to the hospital. Outcomes will be measured by patient feedback and evaluation of data at six months after implementation compared to baseline data.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 10-098

Poster Title: Effect of a bedside medication delivery service on 30 day readmission rates in a disproportionate share hospital

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Purpose: With the full implementation of the Hospital Readmissions Reductions Program by Center for Medicare and Medicaid Services, healthcare institutions across the country have begun implementing programs aimed at reducing 30 day readmissions. Disproportionate share hospitals (DSH) face unique challenges in obtaining access to resources for their uninsured and underinsured patient populations. The goal of this study is to determine the impact of a bedside medication delivery service on 30 day readmission rates and patient satisfaction at a DSH.

Methods: This study has been approved by the Institutional Review Board. The bedside medication delivery service will be provided through an in-house outpatient pharmacy. Data will be collected on all participating patients admitted from September 1, 2016 to April 30, 2017 and will include: age, gender, comorbidities, reason for admission, admission date, discharge date, discharge unit, number of new prescriptions upon discharge, if there is 30 day readmission, and the reason for readmission. Patient satisfaction will be measured with an anonymous survey included with the filled prescriptions. At the end of data collection period, monthly 30 day readmissions, total 30 day readmissions, and readmission rates by unit will be compared to historical data to determine the impact of the bedside medication delivery program on 30 day readmissions. The primary endpoints are 30 day readmission rates versus the comparator group and patient satisfaction and feedback. The secondary endpoints are percentage of eligible patients participating in the program, reasons for non-participation, reasons for readmission versus the comparator group, and the number of prescriptions filled by

participating patients. For the purposes of this study, the comparator group will be patients whom were admitted from September 1, 2015 to April 30, 2016.

Results: Not applicable

Conclusion: Not applicable

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-099

Poster Title: Identification of risk factors associated with multi-drug resistant infections at a community hospital

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Purpose: As the prevalence of multi-drug resistant (MDR) infections continues to grow, it has become increasingly important that clinicians be able to properly identify and treat high risk patients in a timely manner. In addition to increased healthcare costs, MDR infections are also associated with longer lengths of stay and poorer clinical outcomes. The purpose of this study is to retrospectively analyze cases of MDR infections at a community hospital to identify risk factors associated with their development and, based on the results, implement measures to effectively screen, identify, and treat patients at risk for MDR infections.

Methods: This study will include patients at least 18 years old, admitted to our institution from January 1, 2013, through December 31, 2015, who had at least one positive culture for either an extended-spectrum beta-lactamase (ESBL) producing organism or carbapenem-resistant Enterobacteriaceae (CRE). Initial isolates from each hospital admission will be included for analysis, and all subsequent isolates from the same hospital admission will be excluded. Retrospective data collection will be performed via chart review and will include patient demographics, comorbid conditions, surgical procedures in the 90 days preceding admission, length of stay, site and date of culture, MDR organism(s) isolated, and antimicrobial exposure in both the 90 days preceding admission and during the hospital admission prior to CRE or ESBL culture isolation. The study has received Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-100

Poster Title: Impact of targeted transition of care services by clinical pharmacists on hospital readmissions

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Purpose: Transition of care (TOC) is defined as the movement of a patient from one setting of care to another. Pharmacists have the ability to provide patient education as well as clarify medication discrepancies during this TOC period. While previous studies have shown conflicting data on the impact of pharmacist intervention on hospital readmission rates, a targeted approach to pharmacist TOC services based on institution-specific trends may be beneficial. The purpose of this study is to identify factors associated with readmission at a community hospital, implement targeted pharmacist TOC services, and evaluate the impact on patient satisfaction and hospital readmission rates.

Methods: This study is approved by the Institutional Review Board. Adults admitted with an inpatient status and then readmitted within 30 days to a single community hospital whose initial admission occurred from May 2016 through July 2016 are eligible for inclusion. Pre-built electronic health record (EHR) reports will be used to identify patients and determine 30-day readmission rates. Data will be collected on the following: patient demographics, insurance provider, past medical history, discharge details, medications, initial discharge diagnosis, readmission diagnosis, cause(s) of readmission, medication history, and if discharge counseling was completed by a pharmacist. ICD-10 codes will be used to determine initial discharge diagnosis as well as subsequent readmission diagnosis. Causes of readmission will be categorized and analyzed for trends to develop a targeted approach to TOC services. After the interventions are made, a comparator group of patients will be identified and impact of services will be assessed. Patient satisfaction will be tracked using HCAHPS scores.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-101

Poster Title: Pharmacist-initiated de-escalation of empiric intravenous vancomycin therapy in critically ill patients utilizing methicillin-resistant Staphylococcus aureus polymerase chain reaction (MRSA PCR) nasal screens

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Purpose: Intravenous (IV) vancomycin is first-line therapy for suspected MRSA infections. It is frequently initiated for patients with risk factors for MRSA colonization and signs of an infection in an acute care setting. Culture and susceptibility results typically guide the de-escalation of vancomycin. However, practitioners hesitate to discontinue vancomycin for patients clinically improving, even if cultures suggest discontinuation. Nasal MRSA screens are shown to have a negative predictive value for MRSA infections of up to 99 percent. The objective of this study is to utilize MRSA PCR nasal screens to facilitate timely de-escalation of IV vancomycin therapy in critically ill patients.

Methods: A novel protocol, pending Institutional Review Board approval, is formed and awaiting approval by the hospital medication use committee to de-escalate IV vancomycin based on MRSA PCR nasal screen results. Adult patients receiving IV vancomycin that meet inclusion criteria are eligible for de-escalation of vancomycin within 48-72 hours of admission by clinical pharmacists. Inclusion criteria consists of a negative MRSA nasal screen within 24 hours of admission and cultures negative for organisms warranting IV vancomycin therapy (i.e. MRSA, methicillin-resistant Staphylococcus epidermidis, and/or other resistant gram positive bacteria). Existing hospital protocol states patients admitted to critical care units are to be screened for MRSA colonization upon admission using the nasal screen. Exclusion criteria covers patients not clinically improving in the absence of cultures, patients with cultures obtained more than 48 hours after admission, or patients not receiving other antibiotics to cover isolated pathogen(s). Intravenous vancomycin use will be evaluated in critical care units before and after implementation of the de-escalation protocol. Vancomycin days of therapy will

be the primary outcome measure. Descriptive statistics and a student t-test will be utilized in analyzing outcome results.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-102

Poster Title: Pharmacist conducted education on the appropriate prescribing of stress ulcer prophylaxis to reduce inappropriate usage in an acute care setting

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Purpose: Stress ulcer prophylaxis (SUP) therapy is recommended in certain critically ill patients to prevent gastrointestinal bleeding and ultimately affect the length of stay and mortality. Currently, medications for SUP are prescribed to the majority of admitted patients, often unnecessarily. Data shows that the overuse of these medications is not without risks. Both proton pump inhibitors (PPI) and histamine H2-receptor antagonists (H2 blocker) have an increased rate of Clostridium difficile infection (CDI) in hospitalized patients. The objective of this study was conducted to evaluate the use of these medications and take actions to reduce unnecessary use.

Methods: Retrospective chart review the use of famotidine and pantoprazole used in all inpatient units for the week of July 24th through July 31st. Criteria for stress ulcer prophylaxis were obtained from American Society of Health-System Pharmacists (ASHP) stress ulcer prophylaxis guidelines from 1999. Appropriate use was defined by meeting one or more of the following criteria: coagulopathy (defined as platelet count less than 50,000, international normalized ratio (INR) greater than 1.5, partial thromboplastin time (PTT) greater than 2 times control value), mechanical ventilation for greater than 48 hours, history of gastrointestinal (GI) ulceration or bleeding within the past year, traumatic brain injury/traumatic spinal cord injury/ burn injury, or two or more of the following minor criteria (sepsis, intensive care unit (ICU) stay greater than 1 week, occult GI bleeding for 6 or more days, and glucocorticoid therapy defined as greater than 250mg hydrocortisone or equivalent). Patients that were on proton pump inhibitors (PPI) or histamine H2-receptor antagonists (H2 blocker) prior to admission were excluded. Addition or continuation of a PPI or H2 blocker to the discharge medication list was also recorded.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-103

Poster Title: The opioid- and sedative-sparing effects of chlorpromazine in children less than 3 years of age after cardiovascular surgery

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Additional Author (s):
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Purpose: Pediatric patients with congenital heart disease often require cardiac surgery which results in the need for pain and sedative medications after the operation to maintain comfort and decrease anxiety. Although chlorpromazine is commonly used at our institution as an adjunct medication for pain and sedation after pediatric cardiovascular surgery, literature demonstrating the safety and/or efficacy of this practice is scant. The objectives of this study are to determine the safety and efficacy of chlorpromazine and determine its opioid- and sedative-sparing effects.

Methods: In this retrospective cohort study, 72 patients aged 1 month to 3 years who received chlorpromazine within 72 hours of cardiovascular surgery between January 1, 2010 and August 1, 2016 will be included. Patients who received chlorpromazine will be matched via a cohort control model with patients who did not receive chlorpromazine in a 1:1 ratio based on age, primary congenital heart lesion, cardiac surgery, surgery year, and post-operative day. Patients with Trisomy 21 will be included in the study and analyzed separately. Baseline characteristics to be collected include age, weight, gender, severity of illness score, primary congenital heart lesion, cardiac surgery, and prior surgeries. The cumulative daily dose of sedatives and opioids in the 72 hours following chlorpromazine initiation will be collected, as well as efficacy endpoints such as sedation and pain scores, duration of mechanical ventilation, duration of hospital length of stay, ICU length of stay, and mortality. Safety endpoints that will be collected include naloxone or flumazenil administration, incidence of QTc prolongation, Torsades de pointes, extrapyramidal symptoms, and neuroleptic malignant syndrome.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-104

Poster Title: Impact of emergency department discharge order folder on prescribing errors and optimization

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Purpose: In a pediatric emergency department, a pre-populated order folder was integrated into the electronic medical record with the goal to minimize prescription errors upon discharge. The objective of this study is to compare the rate of errors pre and post-implementation of the folder to evaluate the discharge order folder.

Methods: A retrospective chart review will be conducted of prescriptions written in the pediatric emergency department (PED). The two groups for comparison will include of a sample of 200 prescriptions prior to folder implementation (February 1, 2014 – July 31, 2014) and a sample of 200 prescriptions post-implementation (December 1, 2014 – May 31, 2015). Prescriptions included in the discharge prescription order folder will be included in data collection focusing specifically on albuterol, acetaminophen, amoxicillin, ibuprofen, prednisolone/prednisone, and erythromycin prescriptions. Primary end point analysis will evaluate the rate of error occurrence between groups. Secondary analysis will provide further breakdown by classifying the type of error that occurred, the training level of the physician, error rates within specific commonly prescribed pediatric medications, and the impact of pharmacist presence in the PED on error rates. Errors will be categorized into one of the following groups: dose too low, dose too high, inappropriate dose for indication, incorrect direction, incorrect quantity prescribed, inappropriate product, and omission. A reduction in overall error rate would demonstrate a positive impact directly related to the implementation of the prescription discharge order folder.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-105

Poster Title: Assessing clinical utility of thromboelastography versus conventional coagulation tests in patients with cirrhosis

Primary Author: Sandra Thorarensen, Indiana University Health, IN; **Email:** sthorarensen@iuhealth.org

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Purpose: Patients with advanced liver disease are known for having hemostatic abnormalities and are at an increased risk for procoagulant and anticoagulant effects. Thromboelastography is a point of care assay that assesses the clotting cascade in its' entirety from clot initiation to lysis in a whole blood sample. Thromboelastography provides an overall assessment of hemostasis in an individual compared to conventional coagulation tests. The objective of this study is to evaluate if the use of thromboelastography changes medical management in patients with cirrhosis compared to conventional coagulation tests.

Methods: This study will be submitted to the Institutional Review Board for approval. An electronic medical record system will be used to include patients who are 18 years or older, diagnosed with cirrhosis, and received thromboelastography (TEG) and an international normalized ratio (INR) value within a 24-hour period. Patients who received an INR only will be compared to patients who received an INR and TEG. The two groups will be compared by using a matched case control based on factors such as disease severity, INR values, and reason for admission. Baseline demographics such as patient age, gender, etiology of liver disease, and Child-Pugh scoring on admission will be collected. This study will assess the amount of blood products such as fresh frozen plasma, and platelets, blood factors, and other pharmacologic agents a patient received after receiving a TEG or INR value. Secondary outcomes to be evaluated are incidence of bleeding, thrombus formation, and mortality at 28 days.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-106

Poster Title: Evaluation of implementation of pharmacist ambulatory care services in heart failure management

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Purpose: Numerous studies show that pharmacist involvement in heart failure (HF) management improves clinical care, yet statistics demonstrate that HF outcomes are not optimized in most settings. The objective of this study is to initiate pharmacist HF services in a mid-size clinic system and demonstrate subsequent improvement in patient outcomes and adherence to treatment guidelines. Baseline data (n=84) will be evaluated to assess current adherence to guideline recommendations and evaluate need for pharmacist services.

Methods: The study will be submitted to the International Review Board for approval. Pharmacist HF services will be implemented according to institution-approved protocol. The pre-intervention cohort will consist of patients with a diagnosis of heart failure with reduced ejection fraction (HFrEF) and under the care of an Indiana University Health Southern Indiana Physicians (IUHSIP) cardiologist. The post-intervention investigational cohort will consist of patients with HFrEF diagnosis under care of IUHSIP cardiologist and referred to pharmacist services to be compared with the control post-intervention cohort of patients with HFrEF diagnosis under care of IUHSIP cardiologist but not referred to pharmacist services. Retrospective chart reviews will be conducted for pre-implementation and post-implementation groups to determine which HF patients meet the primary composite endpoint of: percentage of patients taking an angiotensin converting enzyme inhibitor (ACEi), angiotensin receptor blocker (ARB), or angiotensin receptor-neprilysin inhibitor (ARNI) at target dose; taking a beta blocker at target dose; not using tobacco products or have documentation of tobacco cessation education; and who have received appropriate pneumococcal and influenza immunizations. Secondary endpoints include improvement in 30-day HF hospital readmission

rates and percentage of patients on spironolactone. Frequency of pharmacist initial and follow-up visits, medication review interventions, drug therapy adjustments, and educational sessions will also be quantified. Data analysis will include comparison of pre- and post-implementation rates for the primary and secondary endpoints.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-107

Poster Title: Evaluation of a Vancomycin Dosing Protocol in Obese and Non-Obese Patients

Primary Author: Daniel Wilson, Indiana University Health Bloomington, IN; **Email:** dwilson10@iuhealth.org

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Purpose: After many decades, vancomycin remains a mainstay of treatment due to its vast supporting literature, low cost, and the desire to minimize exposure to newer agents to avoid resistance. Obesity has been a factor that has challenged each of these qualities, making the use of vancomycin problematic in this population. Despite being widely studied in this population there is little consensus on dosing strategies, and clinicians struggle to obtain safe and therapeutic troughs. This retrospective review will demonstrate whether the dosing protocol of the institution being studied is equally safe and effective in obese and non-obese patients.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. Data will be collected from the electronic medical records of patients who received intravenous vancomycin from June 1, 2016 through August 31, 2016. Patients ages 18 and older who had at least one vancomycin trough drawn during treatment will be included. Patients with end stage renal disease, baseline creatinine clearance /=130% of ideal body weight) or non-obese. The primary endpoint is the proportion of patients who achieved the target vancomycin trough at the first level in these two groups. Secondary endpoints include the proportion of patient experiencing a subtherapeutic trough at the first and all levels, a supratherapeutic trough at the first and all levels, a therapeutic trough at all levels, and nephrotoxicity. Statistical analysis will be performed to detect statistical difference in these endpoints.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-108

Poster Title: Evaluation of preoperative and post-operative venous thromboembolism (VTE) prophylaxis

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Purpose: The purpose of this quality initiative (phase I and phase II) study is to retrospectively and prospectively look at Lutheran Hospital's multidisciplinary teams' adherence to national guidelines regarding venous thromboembolism (VTE) prophylaxis assessment and prevention. Our primary objective is to evaluate the efficacy of Caprini VTE risk assessment tool in preventing post-operative VTE.

Methods: This study will be completed at Lutheran Hospital, Indiana. Authorization to complete this study was presented to the Lutheran Hospital institutional review board and was approved. The First phase of the study is a retrospective chart review of venous thromboembolism (VTE) events that occurred in hospitalized surgical and medical patients from January 1, 2015 until implementation of the protocol. The protocol will assess whether appropriate prophylaxis was utilized prior to implementation of the VTE risk assessment tool. Our patient population included surgical and medical patients who were found to have a post-operative VTE event. The incidence of post-operative VTE at Lutheran hospital for the year 2015 was 43 and the goal is to reduce that rate by 50%. To determine appropriateness of VTE therapy in our patient population, we plan to utilize the Caprini thrombosis risk scoring method. The number of events that could have been prevented if a protocol and risk assessment was put into place will be analyzed. Phase II will prospectively look at the rate of decrease for VTE events post-operatively. The recommended treatment algorithm for VTE prophylaxis was created and presented to the committee. Once this algorithm is approved, the committee will then set a timeline to implement the use of the risk assessment tool to determine the appropriateness of VTE prophylaxis.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-109

Poster Title: Impact of pharmacist-run annual wellness visits in a private physician's office

Primary Author: Aleksandra Voght, Lutheran Hospital, IN; **Email:** apopovski2016@gmail.com

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Andrea Wilhite

Purpose: The purpose of this study is to implement a process for pharmacist-run Medicare annual wellness visits (AWV) in a private physician's office. The primary objective is to assess cost revenue through this service. In addition, time saved for the physician and types and number of pharmacist medication interventions will be evaluated.

Methods: This study will be submitted to the Institutional Review Board for approval. A pharmacist-run Medicare annual wellness visit (AWV) will be implemented within a private physician's office. There are approximately 500 Medicare patients qualifying for these visits. A referral by the primary physician will be utilized for recruitment. The pharmacist will perform several low risk assessments during an AWV posing no risk to the patient. These assessments include a health risk assessment, physical assessment, and a patient history including: family history, past medical history, allergies, medications, vaccination history assessment, and a provider list. Three patient health questionnaires (PHQ) will be conducted to review risk factors for dementia and depression (PHQ-2, PHQ-9, and Mini Cognitive test). Based on these assessments, a pharmacist will provide personalized health advice to the patient. Data will be collected including number of patients seen by the pharmacy service, time saved for physician, and cost revenue for the clinic. In addition, type and number of interventions made will be evaluated.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-110

Poster Title: Impact of a free heart failure medication program on thirty-day hospital readmission rates

Primary Author: Kathryn Mischler, Memorial Hospital of South Bend, IN; **Email:** katie.mischler@gmail.com

Additional Author (s):
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Mark Herriman
Kaitlyn Priniski

Purpose: Decreased hospital readmissions of heart failure patients would lead to improved clinical outcomes. Additionally, increased readmissions can cause hospitals to receive reduced payments from the Center for Medicare and Medicaid Services. One strategy to avoid these penalties would be providing certain medications to patients for free since the inability to afford medications upon discharge can lead to decreased compliance with medications proven to decrease morbidity and mortality. The objective of this study is to determine whether a free heart failure medications initiative decreases thirty-day readmission rates of patients discharged from Memorial Hospital of South Bend.

Methods: Electronic medical records will be examined to complete a retrospective review of patients who were discharged with a thirty-day supply of heart failure medications before and after this program began on April 11, 2016. Medications provided to patients from this initiative include lisinopril, carvedilol, furosemide, and potassium chloride extended-release tablet. These medications are filled at the hospital's pharmacy prior to the patient's discharge. Medications dispensed will be at the discretion of the prescribing physician. Patients admitted with the primary diagnosis of heart failure will be included in this study. The primary endpoint of this study is all-cause hospital readmission rates thirty days following the patient's discharge from Memorial Hospital of South Bend. The secondary endpoints will be hospital readmission rates due to heart failure exacerbations thirty days following the patient's discharge and percent reduction in all-cause hospital readmissions. This study has been approved by Memorial Hospital of South Bend's Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 10-111

Poster Title: Impact of pneumatic tube system on time to medication administration

Primary Author: Anu Thinda, Memorial Hospital of South Bend, IN; **Email:** athinda@beaconhealthsystem.org

Additional Author (s):
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Purpose: Pneumatic tube systems are used in many institutions for rapid and reliable transport of medical material. Memorial Hospital of South Bend Pharmacy Department recently installed a pneumatic tube system. The objective of this study is to see how effective the use of the new tube system will be by comparing the time from order entry to drug administration before and after the implementation of the pneumatic tube system at Memorial Hospital of South Bend.

Methods: This study was submitted to the Institutional Review Board and has been approved. The study will be a retrospective analysis and data points will be gathered for patients with medications delivered to floors which have the tube system. Memorial Hospital of South Bend uses an electronic medical record that supports computerized prescriber order entry and this study will involve collecting data from the electronic medical record regarding time to administration of a medication following order entry. This data will be looked at prior to the implementation of the new system for a time frame of 90 days and then again for the same time frame after education for and implementation of the system has taken place. A set sample size of 100 will be used for each time period. Prior to utilization of the pneumatic tube system, education will be provided to staff utilizing it. Once that education is delivered, tube system use will be initiated and data after its implementation will be collected. The primary end point of this study is time from order entry to medication administration prior to and following implementation of the pneumatic tube system. The secondary endpoint is percentage of STAT medications administered within 60 minutes.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-112

Poster Title: Impact of rapid identification technology on the management of coagulase-negative Staphylococcus blood cultures in a multi-center community hospital system

Primary Author: Jaxson Burkins, Parkview Health, IN; **Email:** jaxson.burkins@parkview.com

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Purpose: Coagulase-negative Staphylococcus (CoNS) bacterial species are typically colonizers of the skin and often considered contaminants of blood cultures. Generally, these gram-positive cocci are empirically treated by providers while awaiting final speciation. Rapid polymerase chain reaction (PCR) technology can distinguish CoNS from other gram-positive species more rapidly than conventional cultures. This technology, combined with antimicrobial stewardship, may reduce the time to clinical decision of contamination and shorten the duration of unnecessary empiric antibiotics. The objective of this study is to evaluate the clinical impact of rapid PCR identification on the management of CoNS-contaminated blood cultures in a community hospital system.

Methods: This retrospective chart review will evaluate subjects with CoNS-contaminated blood cultures before and after implementation of rapid PCR identification technology at seven community hospitals. Blood culture PCR and stewardship review were fully implemented by January 2016. Therefore, the post-implementation group timeframe is January to June 2016 and the pre-implementation comparator group timeframe is January to June 2015. Subjects eligible for inclusion will meet the following criteria: 18 years or older, inpatient at a Parkview Health facility in the listed timeframes, positive CoNS blood culture documented as a contaminant by a clinician in the medical record, and receipt of at least one dose of antibiotic therapy with activity against CoNS. Subjects will be excluded for the following: concurrent infection and receipt of antibiotic therapy not specific to CoNS, presence of polymicrobial bacteremia, physician-documented CoNS infection, history of CoNS bacteremia, documentation of immunocompromised status, or transition to hospice during admission. The primary outcome will be the difference in time to discontinuation of CoNS-related treatment, while secondary outcomes will include length of hospital stay, percent of pharmacist-initiated

discontinuation, and difference in estimated pharmacy drug cost. Subgroup analyses will be performed on the post-implementation group to evaluate therapy duration in ICU versus non-ICU subjects and in cases with an Infectious Diseases consult versus no consult. An additional analysis will assess the time to antibiotic discontinuation following a pharmacist recommendation.

Results: To be presented at Midyear.

Conclusion: To be presented at Midyear.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-113

Poster Title: Effect of body mass index on stroke outcomes after alteplase administration

Primary Author: Kelsi Wurm, Parkview Health, IN; **Email:** k-wurm@onu.edu

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Purpose: Stroke is a leading cause of disability in the United States. Alteplase is the only approved treatment for acute ischemic stroke. Obesity's increasing rate, its elevation of stroke risk, and possible cause of variation in alteplase response suggest a need for further study. The purpose of this study is to evaluate the response to alteplase categorized by body mass index (BMI).

Methods: This retrospective review will utilize an institutional stroke database and electronic medical record to identify patients who received alteplase within 4.5 hours of symptom onset. Patients will be selected from March 1, 2013 until September 1, 2016. The following data will be collected: patient age, gender, ethnicity, height, weight, admission systolic and diastolic blood pressures, time from symptom onset to alteplase administration, alteplase dose, National Institutes of Health Stroke Scale (NIHSS) scores, hemorrhagic complications, clot size, hospital duration, discharge location, and in-hospital mortality. Differences in NIHSS will be calculated and a change in NIHSS greater than or equal to 4 will be considered significant. The proportion of patients with a significant change in NIHSS will be compared between each BMI category: underweight, normal weight, overweight, obese class I, obese class II, and obese class III.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-114

Poster Title: Effects of body mass index on the safety and efficacy of direct oral anticoagulants

Primary Author: Jared Netley, Parkview Health, IN; **Email:** jared.netley@outlook.com

Additional Author (s):
Kris Howard
Kassandra Koopman

Purpose: Direct oral anticoagulants prevent stroke and systemic embolism in patients with atrial fibrillation and are used as prophylaxis and treatment in patients at risk for venous thromboembolism. In the 2016 guidelines, the International Society on Thrombosis and Haemostasis suggested avoiding direct oral anticoagulants in patients of extreme body weight or body mass index due to limited safety and efficacy data for this population. The purpose of this study is to determine the influence body mass index may have on the occurrence rate of thrombotic and significant bleeding events for patients treated with direct oral anticoagulants.

Methods: This study is a retrospective chart review that captures hospital admissions and emergency department visits for subjects at a community hospital system. The study is being performed as a quality improvement strategy and will not be taken for institutional review board approval. Subjects are collected if they present with a thrombotic or significant bleeding event and have a direct oral anticoagulant documented on their prior to admission medication list. Subjects are stratified into groups correlating to their body mass index. Comparisons will be made to determine if there is a higher frequency of thrombotic or significant bleeding events relative to body mass index grouping. Efficacy will be assessed by comparing frequency rates to determine if there is a relative variation in thrombotic events among stratified groups. Safety will be assessed by comparing frequency rates to determine if there is a relative variation in significant bleeding events among stratified groups. Patient charts will also be assessed for concomitant medications that have serious drug-drug interactions, as reported in the package inserts. The primary endpoint will be the comparison of thrombotic and significant bleeding events among body mass index, regardless of direct oral anticoagulation therapy. The secondary endpoint will be the comparison of thrombotic and significant bleeding events between each direct oral anticoagulant, regardless of body mass index.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-115

Poster Title: Validation of the NOVA predictive measure and comparison of Enterococcal infective endocarditis patient outcomes

Primary Author: Jennifer Sposito, Parkview Hospital, IN**; Email:** jennifer.sposito@parkview.com

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Kelli Salmon

Purpose: Recent changes to the American Heart Association guidelines for the treatment of Enterococcal Infective Endocarditis (EIE) as well as new literature on scoring measures predicting the development of EIE following bacteremia merit further evaluation. Two primary objectives will be considered, 1) to further validate the predictive value of the NOVA score by determining if the score would have successfully predicted the likelihood of patients with Enterococcal bacteremia developing EIE, and 2) to determine if the shift in recommended antimicrobial therapy for patients treated for EIE has affected patient outcomes and the incidence of adverse effects.

Methods: This is a dual-aim, single-center, retrospective review of community hospital patient medical records from April 1, 2013 to June 30, 2016. To be included in the first objective of this study, subjects must be at least 18 years old and have at least 1 positive blood culture for Enterococcus during the study period. Patients will be evaluated on their proportion of positive blood cultures, origin of bacteremia, history of prior heart valve disease, and documented auscultation of a heart murmur to determine if a Transesophageal Echocardiograms (TEE) was warranted for further evaluation per NOVA criteria. Inclusion in the second objective of the study required subjects in objective one to also be diagnosed with possible or definite EIE per modified DUKE criteria and have been treated with either 1) beta-lactam plus gentamicin or 2) ceftriaxone plus ampicillin. Patients will be evaluated for clinical outcomes, frequency of adverse effects and monitoring, and length of stay.

Results: Pending study completion.

Conclusion: Pending study completion.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-116

Poster Title: Reducing fluoroquinolone use through implementation of a urinary tract infection (UTI) treatment pathway and healthcare provider education

Primary Author: Erica Little, Riverview Health, IN; **Email:** elittle@riverview.org

Additional Author (s):
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Purpose: Fluoroquinolones are associated with significant adverse effects, including tendonitis, tendon rupture, and Clostridium difficile infection, especially when used in older adults. Additionally, there is a trend of increasing resistance of Escherichia coli and other gram negative organisms to fluoroquinolones. The objective of this study is to decrease the inappropriate use of fluoroquinolones for treatment of urinary tract infections in patients admitted to or seen in the outpatient setting of this institution through implementation of a UTI treatment pathway and targeted provider education.

Methods: Provider education sessions focusing on UTI treatment and practicing fluoroquinolone avoidance will be completed. A new UTI treatment pathway will be created and added to the electronic medical record system. A query of the electronic medical record will be used to identify patients who have had a diagnosis associated with UTI who have also been prescribed ciprofloxacin, levofloxacin, or moxifloxacin, both before and after implementation of the intervention. Data collected will include age, gender, ethnicity, comorbidities, allergies to antibiotics, culture data, antibiotic prescribed, diagnosis, days of therapy, reported adverse events, and pharmacy interventions. The primary endpoint measured will be prescriptions or orders for fluoroquinolones per patient diagnosed with UTI before and after the intervention. Secondary endpoints include duration of antibiotic therapy compared to guideline recommendations, documentation of adverse events or Clostridium difficile infections in the electronic medical record, number of UTI treatment pathway overrides, and pharmacy interventions. This data will be analyzed to determine effectiveness of the UTI treatment pathway along with provider education in reducing fluoroquinolone use in this health system.

Results: Results are pending.

Conclusion: Conclusion is pending.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-117

Poster Title: Improving adherence to a standardized sepsis treatment protocol in a community hospital

Primary Author: Amanda Hunnicutt, Riverview Health, IN; **Email:** ahunnicutt@riverview.org

Additional Author (s):
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Purpose: A diagnosis of sepsis is associated with increased healthcare costs, morbidity and mortality, and length of hospital stay. Ensuring compliance with established order sets following guidelines set forth by the Surviving Sepsis Campaign are critical to improved outcomes associated with sepsis. A standardized treatment protocol was established by our institution in order to improve adherence to directives from Centers of Medicare and Medicaid Services (CMS) National Core Measure for Sepsis. The objective of this study is to assess and identify opportunities to improve compliance with our institution's standardized sepsis treatment protocol to reduce patient morbidity and mortality.

Methods: A pre-post study will be used to measure the impact of targeted interventions to improve adherence to the standardized sepsis treatment protocol and subsequent patient outcomes will be measured. Data collection will start 60 days pre-intervention and then continue for 60 days post-intervention. Data collected will include patient demographics, type and amount of resuscitative fluids used, sequence of antibiotic administration, vasopressor selection, Systemic Inflammatory Response Syndrome (SIRS) score, and origin of infection. Targeted interventions will take place in areas where sepsis is commonly identified and treatment protocol is initiated. Interventions will include education of relevant healthcare staff, implementation of a checklist to be utilized when a diagnosis of sepsis is made, provision of compounded norepinephrine solution, and numerical labeling of antibiotics prior to dispensing in the pharmacy. The primary endpoint is the measured difference in patients who receive appropriate therapy per standardized sepsis protocol pre vs post interventions. Secondary endpoints will include rates of morbidity, mortality, length of hospital stay, and fallout from

CMS Core Measures for sepsis. The chi-squared test will be employed to evaluate the primary endpoint. Descriptive statistics will be used to compare other data.

Results: Results are pending.

Conclusion: Conclusion is pending.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-118

Poster Title: Assessment of pharmacist-managed ambulatory care asthma clinic

Primary Author: Diana Mechelay, Saint Joseph Regional Medical Center/Family Medicine Center, IN; **Email:** diana.mechelay@sjrmc.com

Additional Author (s):

Purpose: Asthma is a common chronic disease in the United States, affecting approximately seventeen million adults and six million children in 2014. Although the number of asthma-related deaths has decreased recently, significant morbidity due to asthma exacerbations still remains. Pharmacist involvement in the management of asthma has been shown to improve asthma outcomes and quality of life. This has been demonstrated in a variety of settings, however to a lesser extent in pharmacist-managed clinics. The purpose of this study is to assess the effectiveness of a pharmacist-managed asthma clinic in improving asthma outcomes in the ambulatory care setting.

Methods: This observational cohort study has received Institutional Review Board approval. The study seeks to assess the effectiveness of the asthma clinic by measuring the number of asthma-related hospitalizations and emergency department visits in the twelve months prior to and after the initial visit with the clinic in pediatric patients with asthma. Secondary outcomes include asthma control test (ACT) scores, asthma quality of life questionnaire (AQLQ) scores, missed days at work or school, recommendations made to the patient, asthma medications prescribed at each visit, and follow-up with visits with Saint Joseph Family Medicine Center (SJFMC) physicians. Patients eligible for enrollment include those less than or equal to eighteen years of age with asthma , who are referred to the clinic by a physician at the SJFMC. Pharmacist interventions include providing patients with self-management education, an action plan, and making pharmacotherapy recommendations to physicians as necessary. Data collection will include the previously mentioned outcomes and pertinent patient medical history via patient interview and chart search. All recorded data will be stored under lock and key and on a password protected secure computer for paper and electronic files, respectively. The primary and secondary endpoints will be evaluated using the paired t-test.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-119

Poster Title: Analysis of several psychological factors among PGY2 pharmacy residency programs tracked throughout the year

Primary Author: Jason Isch, Saint Joseph's Regional Medical Center, Family Medicine Center, IN; **Email:** jason.isch@sjrmc.com

Additional Author (s):
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Purpose: The number of residents and residency programs have increased every year and the American Society of Hospital Pharmacists currently accredits over 2,000 unique residency programs. Post-graduate training can be a stressful and trying time for pharmacists within this new role. There are several studies available assessing stress and burn-out in medical residents, however few studies exist for pharmacy residents. The purpose is to identify potential factors contributing to stress tracked throughout the resident year and to discover how these pharmacists pursuing residency training handle these new challenges.

Methods: In order to evaluate the purpose, this IRB approved, prospective study encompasses surveys via Survey Monkey Pro that will be sent to all ASHP accredited second year post-graduate pharmacy programs to determine levels of stress, anxiety, and depression throughout the residency year. Pharmacy residents will be asked baseline questions about themselves along with a series of psychological questions asked within the Depression-Anxiety-Stress Survey (DASS-21). Initial survey results will be compiled throughout the first few weeks of October, and repeat surveys will be distributed at the end of every quarter until the end of the 2017 residency year. A final survey will be sent to reflect on levels of stress throughout the year and will be compared to quarterly data.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-120

Poster Title: Venous thromboembolism prophylaxis in trauma patients

Primary Author: Sushma Shiravanthe, St. Vincent Anderson Regional Hospital, IN; **Email:** sushma.shiravanthe@stvincent.org

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Purpose: Venous thromboembolic (VTE) events are common, preventable causes of mortality and morbidity in trauma patients. The American College of Chest Physicians recommends use of mechanical and/or chemical prophylaxis in trauma patients, dependent on VTE risk stratification. However, concerns over hemorrhagic complications often dissuade providers. A survey of St. Vincent Anderson Regional Hospital by the American College of Surgeons reported patients were not consistently receiving chemical VTE prophylaxis. In response, physician education regarding VTE prophylaxis recommendations in trauma patients was provided. This study aims to measure the impact of physician education on the use of chemical VTE prophylaxis in trauma patients.

Methods: This study is approved by the Institutional Review Board. All patients admitted with a trauma diagnosis between March 1, 2016 and January 31, 2017 will be reviewed for inclusion. The following data will be collected from the electronic medical record: baseline patient demographics, injury severity score (ISS), Glasgow coma scale (GCS) score, VTE risk factors, length of stay, trauma type, chemical and/or mechanical VTE prophylaxis agent and length of therapy, time to initiation of chemical and/or mechanical prophylaxis, and incidence of VTE, myocardial infarction (MI), stroke, major bleed or death from stroke or MI at 14 days or the incidence of readmission for VTE, MI, stroke or major bleed within 14 days of the initial trauma. All data will be recorded and maintained confidentially. The primary objective is to report and compare rates of chemical VTE prophylaxis utilization prior to and after the physician education intervention. The secondary objective is to report and compare rates of VTE, stroke, MI, and death from stroke or MI. For the safety endpoint, rates of major bleed will be compared.

Unpaired t-test, Mann-Whitney U test, chi-square test, and logistic regression analysis will be utilized depending on the level of analysis and variables. P-values ≤0.050 will be considered significant.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-121

Poster Title: Evaluating naloxone administrations retrospectively to improve opioid prescribing patterns and patient safety in a community hospital setting.

Primary Author: Kashyap Padmaraju, Union Hospital, IN; **Email:** kpadmaraju@uhhg.org

Additional Author (s):
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Purpose: Overdose by opioids is a preventable and potentially lethal condition which can arise from prescribing practices, inadequate patient understanding, medication misuse, and errors in drug administration. Our purpose is to evaluate naloxone as a trigger tool to identify areas for improvement in our institutions opioid prescribing. After reviewing our naloxone use we plan to implement changes to our opioid prescribing patterns.

Methods: We conducted a retrospective medication use evaluation of all naloxone administrations within a three month period, May – July 2016. A query was conducted and resulted in 86 administrations of naloxone. Thorough manual chart review was done to evaluate each administration for appropriateness and documented key clinical factors that led to each administration. All administrations were categorized based on specific factors to help identify prescribing practices including but not limited to the unit which naloxone was most used, opioids given in the past 24 hours, and disease states of patients at highest risk. Patients that were excluded include emergency room patients and naloxone used for itching. We also evaluated the severity (example; death, ICU transfer, intubation) of any adverse event that occurred to gather data to aid in implementation of policies and procedures that benefit patient safety.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-122

Poster Title: Implementation of transitional care pharmacist model and the effects on readmission rates of high risk patients

Primary Author: Stephanie Matta, Union Hospital, Inc., IN; **Email:** smatta@uhhg.org

Additional Author (s):
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Purpose: Hospital readmission rates are a major indicator of inpatient quality of care. Centers for Medicare and Medicaid Services (CMS) have developed financial incentives for healthcare systems in an effort to decrease readmissions. This stemmed from the Medicare Payment Advisory Commission estimation that readmissions resulted in a $15 billion increase in annual expenditures. The LACE score is used to identify patients' risk for readmission; a score of 10 or greater indicates high risk. The purpose of this study is to evaluate the effectiveness of interventions made by transition of care pharmacists upon discharge of patients identified as high risk for readmission.

Methods: Two transition of care pharmacist positions were occupied effective September 2016 in this three hundred forty-five bed community teaching hospital. Transition of care pharmacists will work closely with case managers and discharge planners to determine the patients that will most benefit from pharmacist interventions. Also, a daily report of patients with a LACE score of 10 or greater will be generated to help prioritize workflow. Pharmacists will attempt to perform medication reconciliation and profile review, provide patient education, and assist with medication accessibility to the identified patients. The primary outcome will be the 30 day all cause readmission rate. This data will be compared to the previous year in all cause 30 day readmission rate based on the pharmacists' interventions for each patient. Transition of care pharmacists will communicate their follow up and interventions to inpatient clinical pharmacists through the hospital-based clinical pharmacy support system. The pharmacy team will work together to optimize each patient's discharge therapy, improve the patient's and caregiver's understanding of medications and corresponding disease states, and ensure adequate continuity of care. They will also communicate to the patient's outpatient

providers through a note in the discharge plan. Medication accessibility will be facilitated through the hospital's outpatient pharmacy and 340B pricing system. This project has been approved by the Hospital Readmissions Team.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-123

Poster Title: Comparison of medication histories completed by a pharmacist versus emergency department personnel

Primary Author: Shannon Sullivan, Lawrence Memorial Hospital, KS; **Email:** ssullivan88@gmail.com

Additional Author (s):
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Purpose: Obtaining an accurate medication history for patients admitted to the hospital is a very important component of patient safety. In many hospital settings, these medications histories are obtained by emergency department providers not by a pharmacist. A multitude of studies confirm medication histories completed by non-pharmacy personnel are incomplete and contain errors potentially compromising medication safety. Conversely, literature suggests pharmacists provide a more complete medication history with less errors. The purpose of this study is to compare medication histories obtained by ED providers versus pharmacists and to identify the type of interventions made on medication histories by pharmacists.

Methods: This will be a two month, retrospective study comparing medication histories for all admitted patients obtained by ED providers versus those obtained by a pharmacist. Currently, an ED physician or nurse obtains a medication history from the patient or patient representative. Once the patient is admitted to the floor, a pharmacist or pharmacy intern also obtains a medication history. Following each medication history, the pharmacist completes an electronic form in the patient's medical record to detail the interventions made. These interventions are classified as follows: add/delete a medication, wrong frequency, wrong dose, allergy added, and allergy clarified. Patient charts will be reviewed to identify the type of interventions made by pharmacists with an emphasis on high risk and narrow therapeutic index medications. Patients who were not admitted to the hospital through the emergency department, pediatric patients and patients admitted to the mother baby unit will be excluded from this study. This study will be submitted to the Institutional Review Board for Approval. Patient identifiers will be removed and all information will be maintained in a confidential manner.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-124

Poster Title: Assessment of fluoroquinolone use for uncomplicated urinary tract infections in a 173 bed community hospital emergency department

Primary Author: Lauren Aversman, Lawrence Memorial Hospital, KS; **Email:** lauren.aversman@lmh.org

Additional Author (s):
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Mackenzie Magid

Purpose: The U.S. Food and Drug Administration recently completed a safety review on fluoroquinolone antibiotics, resulting in an updated Black Boxed Warning and safety labeling changes. These safety changes advise health care providers to limit the use of fluoroquinolones for patients with serious bacterial infections; therefore, their use should be avoided in patients with acute bacterial sinusitis, acute exacerbation of chronic bronchitis and uncomplicated urinary tract infections (UTI), unless no alternative treatment options remain. The primary objective is to assess fluoroquinolone use for the treatment of uncomplicated UTIs. The secondary objective is to assess the overall antibiotic selection for uncomplicated UTIs.

Methods: This quality improvement project will be a retrospective chart review of patient visits in the Emergency Department for an uncomplicated UTI from May through July 2016. Patient charts will be identified from the electronic medical record based on the ICD-10 diagnosis code of N39*. The following data points will be abstracted from the electronic medical record database: patient age, gender, pertinent drug allergies, antibiotic received, duration of therapy, prescribing physician, and assessment of risk factors for uncomplicated versus complicated UTI. The Infectious Disease Society of America (IDSA) defines an uncomplicated UTI as cystitis occurring in healthy, non-pregnant, non-menopausal women who are absent of fever, flank pain, or other suspicion for pyelonephritis. Patients less than or equal to 18 years of age or those identified to have a complicated UTI (i.e. pregnancy, men, indwelling catheters, etc.) will be excluded. Data will be collected and recorded using a standardized chart review process. All patient identifiers will be removed and data will be maintained in a confidential manner. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-125

Poster Title: Evaluation of pharmacists' clinical interventions at a community hospital

Primary Author: Patricia Hoover, Olathe Medical Center, KS; **Email:** patricia.hoover@olathehealth.org

Additional Author (s):
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Purpose: Heath care payments are increasingly tied to quality and value-based care. The pay-for-performance model requires measurable health quality and outcomes. Pharmacists provide clinical services and medication interventions on a daily basis through approved protocols, medical staff consults, and pharmacist-identified medication-related issues. Some examples of interventions include: pharmacovigilance in medication safety, therapy optimization, pharmacokinetic consultations, formulary management, treatment monitoring, and patient counseling. The objective of this study is to quantify clinical interventions performed by pharmacists and assess their potential impact on patient care in a community hospital.

Methods: Pharmacists at a community hospital will document their clinical interventions in the electronic medical record system through their normal course of daily activity. The following data will be documented: types of intervention, initiator of the clinical intervention, associated medication order(s), the prescriber, prescriber's response, clinical significance of the intervention, patient outcome, pharmacist intervention time, and any additional information provided by the pharmacists. For the purpose of this study, the Cerner Discern Analytics® reporting system will identify all pharmacist clinical interventions documented between October 2016 and February 2017. In addition, the study investigators will collect the patient census each month. The study investigators can further calculate provider acceptance rate of recommendations, pharmacist time per intervention, and number of pharmacist-led intervention(s) per patient. Based on results of other similar studies, the investigators can then quantify cost-savings and cost-avoidance of pharmacist interventions. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-126

Poster Title: Evaluating compliance to a hypoglycemic protocol in a community hospital

Primary Author: Carleigh Cozad, Salina Regional Health Center, KS; **Email:** ccozad@srhc.com

Additional Author (s):
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Purpose: Hypoglycemia is an avoidable complication that occurs in approximately 7 to 10 percent of hospitalized patients and is associated with increased mortality. The American Diabetes Association recommends a hypoglycemia management protocol be implemented by each hospital system. The protocol should provide information on treatment for patients showing signs and symptoms of hypoglycemia. This project was designed to find areas where compliance to our protocol can be improved in order to ensure patient safety.

Methods: Prior to commencement, this study will be submitted to the Institutional Review Committee for approval. The electronic medical record system was used to identify patients with blood glucose readings less than 50 mg/dL between January 2016 and June 2016. Treatment for hypoglycemic episodes will be evaluated for appropriateness according to the guidelines that are provided in the current hypoglycemic protocol. The following data will be collected: time and date of protocol initiation, time and date of hypoglycemic event, 15 minute blood glucose recheck reading, and type of treatment given. All data will be maintained confidentially and no patient identifiers will be retained.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-127

Poster Title: Assessment of clinical benefit of empiric double coverage for Pseudomonas infections

Primary Author: Zahra Nasrazadani, Salina Regional Health Center, KS; **Email:** znasrazada@srhc.com

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Steven Blanner

Purpose: As antibiotic resistance increases and antimicrobial stewardship efforts intensify, clinicians must reevaluate routine practices to ensure optimal therapeutic approaches, particularly with regard to empiric antimicrobial treatment strategies. The objective of this study is to assess the probability of clinical benefit when greater than one antimicrobial agent is utilized for empiric treatment of presumed Pseudomonas aeruginosa infections, a technique colloquially known as “double coverage.” Due to the disproportionately high rate of patient mortality and antibiotic resistance associated with this organism, developing effective Pseudomonas treatment strategies is critical to stewardship efforts.

Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical record will be utilized to isolate the records of inpatient stays for which Pseudomonas aeruginosa was identified as a causative organism upon microbiological culture. The following data will be collected: length of stay, indication for antimicrobial use (and intubation or catheterization status, when the associated indication is a respiratory or urinary tract infection, respectively), empiric antimicrobial regimen and treatment regimen, treatment day on which susceptibility data was finalized, antimicrobial resistance, adverse drug reactions related to the antimicrobial therapy, selected comorbidities, steroid use, whether the patient was admitted to the critical care unit, and the patient outcome (discharge versus expiration). The patient record will be utilized to assess the sequence of events during the course of treatment and to determine the utility of the double coverage strategy. Based on antimicrobial resistance and other patient-specific risk factors, data will be evaluated to ascertain the probability of clinical benefit versus risk of unnecessary treatment and adverse events. Data will also be analyzed to identify any critical patient population whose high risk stratification warrants the more aggressive double coverage approach. Finally, overall frequency of empiric

double coverage will be compared to total confirmed Pseudomonas for the same time period to determine likelihood of P. aeruginosa as the causative organism when it is suspected.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-128

Poster Title: Reducing utilization of fluoroquinolones through the implementation of a targeted antimicrobial stewardship protocol in a community hospital

Primary Author: Ryan Fleer, Shawnee Mission Medical Center, KS; **Email:** ryan.fleer@ucdenver.edu

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Rudd Hetrick
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Purpose: Fluoroquinolones are among the most popular antibiotics used by prescribers in the United States. Their broad spectrum of bactericidal activity makes them highly effective against a variety of gram positive and negative organisms. While highly effective, fluoroquinolones are not without consequences; a recent FDA safety communication broadened the boxed warning, advising providers to reserve fluoroquinolones for more serious infections due to potentially permanent adverse effects associated with the antibiotic class. Similarly, concerns have arisen due to increased resistance of Escherichia coli and Pseudomonas aeruginosa. Prior studies have observed increased susceptibility to fluoroquinolones following implementation of antimicrobial restriction programs.

Methods: This is an ongoing retrospective cohort study conducted at a community hospital in Shawnee Mission, KS. The study will be submitted to the hospital Institutional Review Board for approval. An antimicrobial stewardship protocol designed to limit empiric fluoroquinolone therapy will be implemented in October 2016. This protocol will be developed based upon both IDSA guidelines and input from the clinical infectious diseases pharmacist and physicians; it will function as a guideline for appropriate fluoroquinolone alternatives. Following development, this protocol will be distributed hospital-wide, and utilization will be encouraged via provider education sessions performed by the PGY-1 resident. Treatment groups will include 100 patients randomly selected before and after protocol implementation (November 2015 to March 2016 and November 2016 to March 2017, respectively) using an AB number generator. Patients will be included if they received any antibiotic as empiric therapy, defined as initial treatment for any infection prior to availability of antimicrobial sensitivities. Primary outcomes

will include the number of inpatient days of fluoroquinolone therapy/1000 patient days, in addition to the number of Emergency Room (ER) prescriptions/1000 ER visits. Secondary outcomes include appropriateness of antibiotic selection, as determined by IDSA guidelines, and hospital seven-day readmission rates. Chi-square tests will be used for nominal data, and a t-test or Mann Whitney-U test will be used for continuous data as appropriate.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-129

Poster Title: Antenatal opiate exposure and effects on neonatal outcomes: Observations at a community birth center

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Purpose: Neonatal abstinence syndrome (NAS) is a withdrawal syndrome that occurs at birth following prenatal exposure to opioids. Maternal antepartum use of opioids has increased dramatically in the United States over the last decade, with the incidence of NAS demonstrating corresponding growth. While the factors contributing to the severity of NAS remain largely undefined, potential variables may include specific type of opiate exposure, extent of exposure, and concomitant use of other substances. This study was designed to evaluate whether associations exist between severity of neonatal abstinence syndrome and specific characteristics of antenatal opiate exposure.

Methods: This study is a retrospective cohort analysis of infants born at Shawnee Mission Medical Center between September 1, 2014 and August 31, 2016, who were identified as at risk for NAS due to prenatal opioid exposure. The study will undergo submission to the Internal Review Board for approval. The inclusion criteria are as follows: documentation of chronic opioid use during pregnancy from maternal disclosure or positive maternal/infant drug screen, and infant scored for NAS utilizing the modified Finnegan score. Exclusion criteria will include earlier than 32 weeks gestation or NAS secondary to prenatal exposure to substance(s) other than opiates. Characteristics of antenatal opiate exposure will be defined by opioid type (short-acting, long-acting, maintenance/opioid replacement therapy, polysubstance) and extent of exposure. The primary endpoint will be severity of NAS, defined by neonate requiring pharmacologic treatment with morphine. Secondary endpoints will include infant length of stay and admission to the neonatal intensive care unit (NICU). We will attempt to control for

confounding by analyzing variables that may influence outcomes, such as concomitant exposure to nonopiates, provision of comfort cares, breastfeeding, and maternal demographics. The results of this study will serve to enhance existing knowledge related to the management of neonatal abstinence syndrome.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-130

Poster Title: Evaluation of pharmacy services and multimodal pain management in patients undergoing colorectal surgery in an enhanced recovery program

Primary Author: Matthew Gutzmer, Stormont Vail Health, KS; **Email:** mgutzmer@stormontvail.org

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Purpose: Enhanced recovery programs (ERP) implement various strategies with the primary goal of reducing time to recovery after major surgical procedures. Pharmacists are involved with multiple interventions throughout the ERP process, including: conducting medication reviews, assessing bowel regimens, recommending antibiotics, and optimizing pain management. The objective of the current study is to assess the pharmacy services utilized and the impact of multimodal analgesia on patients undergoing colorectal surgery in an ERP versus standard protocol.

Methods: This project will be submitted to the Stormont Vail Institutional Review Board for approval. Information will be collected from the electronic medical record in a retrospective chart review for the time period of January 1 to September 30, 2016. The study will utilize a comparison design between two cohorts: patients that underwent a colorectal surgery under ERP protocols and patients that were eligible for ERP but underwent surgery though a traditional protocol. Pharmacy services will be assessed in both groups by evaluation of intervention notes and other medical record documentation. Data will be collected from the date of surgery through admission for each patient and include: length of stay (LOS), age, gender, type of surgery (laparoscopic vs. open), and opioid medications used after surgery. All opioid medications used will be converted using standard calculations to oral morphine equivalents (OME) for comparison. Patients that did not undergo all aspects of the ERP protocol will be excluded in the final analysis.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-131

Poster Title: Antimicrobial stewardship in critically ill patients diagnosed with pneumonia: A retrospective evaluation of an integrated health care system's current practice.

Primary Author: Jennifer Doughty, Stormont Vail Health, KS; **Email:** jedought@stormontvail.org

Additional Author (s):
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Katie Burenheide

Purpose: A joint statement issued in 2012 from the Society for Healthcare Epidemiology of America, the Infectious Diseases Society of America, and the Pediatric Infectious Diseases Society recommended mandatory antimicrobial stewardship programs through a regulatory mechanism. As a result, the Centers for Medicare and Medicaid Services proposed a new rule in June 2016 requiring all hospitals to have an antimicrobial stewardship program to receive federal and state funding. Some of the primary goals of an antimicrobial stewardship program is to ensure appropriate empiric drug therapy, de-escalation of therapy with culture-directed results, and appropriate duration of therapy based on current guidelines.

Methods: To evaluate the adherence to current guidelines, a retrospective data review looked at patients who were admitted to the intensive care units at an integrated health care system with a diagnosis of pneumonia. The study period was from January 1, 2016 through February 29, 2016. Inclusion criteria included age greater than or equal to 18 years of age, admission to the intensive care unit, and an international classification of diseases, tenth revision, (ICD-10) diagnosis code for bacterial pneumonia. Exclusion criteria included pneumonia due to viral, fungal, or undetermined causes. Once the subjects were identified, a review of their electronic medical record was conducted to identify: date, time, and agent of empiric therapy, when cultures resulted and which organism was identified, when de-escalation of therapy happened, and when discontinuation of therapy occurred. Each case was then further categorized into community-acquired pneumonia (CAP), healthcare-associated pneumonia (HCAP), hospital-acquired pneumonia (HAP) or ventilator-associated pneumonia (VAP). The data for each category was pooled to determine mean length of empiric therapy, length of culture-directed therapy, and duration of therapy. This data was compared to the current guidelines available at

the time of the study: either “Infectious Diseases Society of America/American Thoracic Society Consensus Guidelines on the Management of Community-Acquired Pneumonia in Adults” (2007) or “Guidelines for the Management of Adults with Hospital-Acquired, Ventilator-Associated, and Healthcare-Associated Pneumonia” (2005).

Results: Currently in progress.

Conclusion: Currently in progress.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-132

Poster Title: Impact of prolonged intravenous fluids administration on critically ill patients' outcome

Primary Author: Talal Nassar, Stormont Vail HealthCare, KS; **Email:** tnassar@stormontvail.org

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Purpose: Fluid resuscitation therapy (FRT) is designed to optimize stroke volume to maximize perfusion and reduce organ failure. There are no guidelines that define optimal length of therapy or parameters to guide discontinuation of fluid resuscitation therapy. Studies have shown prolonged fluid administration results in increased mortality and morbidity in critically ill patients. This study includes examining the prescribing pattern of maintenance intravenous fluid therapy in our hospital in different adult ICUs and post ICU discharge, evaluating intravenous fluid volumes administered and effects of intravenous fluid maintenance therapy on total fluid balance, and inpatient morbidity and mortality throughout hospital stay.

Methods: This is a retrospective study that reviews patients admitted to any adult critical care unit (ICU) that fit the inclusion/exclusion criteria from Sep 1st 2015 through Dec 31st 2015. Patients will be followed during their ICU admission and after transfer from the ICU to any floor up to 7 days or discharge from the hospital whichever comes first. Investigational Review Board has approved this study.
Data collection includes age, gender, actual body weight, ideal body weight, reason of admission, SOFA score, lactate, bicarbonate and chloride levels, serum creatinine, mean arterial pressure, past medical history and chronic use of diuretics.
The primary end points will include prescribing patterns of intravenous fluid therapy and the relationship between both bolus therapy and the maintenance fluid therapy with fluid weight ratio. The secondary end points will include correlation between daily and cumulative fluid balance and mortality and morbidity. All data will be recorded without any patient identification and maintained confidentially. We will assume after applying the inclusion/exclusion criteria that the number of subjects will provide us with a power of 80 %

with an alpha error of 0.05. We will assume that positive balance > 8% will increase mortality by 20%.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-133

Poster Title: Effect of pharmacist directed education for health care workers on pneumococcal vaccination rates in outpatient clinics

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Additional Author (s):
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Purpose: Patient and provider barriers to vaccination, including lack of education, have been reflected in pneumococcal vaccination rates in elderly patients which remain low and unchanged. The aim of this study is to determine if education provided by pharmacists to health care workers in primary care clinics will increase pneumococcal vaccination rates.

Methods: This study has received Institutional Review Board approval. The retrospective chart review will be conducted utilizing electronic medical records of patients who visited a primary care provider. The primary objective is to determine the difference in pneumococcal vaccination rates between 2015 and 2016 among primary care clinics. Between September and October 2016, pneumococcal vaccination education occurred for six clinics which have an embedded pharmacist. Seven clinics without an embedded pharmacist did not receive education and therefore serve as the comparator group. The 2015 and 2016 vaccination rates are determined from data from October through December of 2015 and 2016, respectively. Data will be collected to identify patients 65 years and older and who had a visit to their primary care provider between October 1, 2015 – December 31, 2015 and October 1, 2016 – December 31, 2016. Data collected will include date of birth, type of pneumococcal vaccines received (PCV13, PPSV23), date pneumococcal vaccines received and date of most recent visit to primary care clinic in 2015 and 2016. The secondary objectives include the change in rate of patients with both recommended vaccines documented, percentage of patients with vaccines documented in a CDC recommended order and percentage of unnecessary vaccination.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-134

Poster Title: Assessment of an outpatient pharmacist and nurse collaborative anticoagulation service

Primary Author: Cameron Atwill, Via Christi Hospitals Wichita, Inc., KS; **Email:** cameron.atwill@via-christi.org

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Purpose: Increased time in therapeutic range (TTR) is associated with better outcomes for patients receiving warfarin therapy. A previous study published in Circulation in 2008 concluded that 58% is the minimum TTR threshold for benefit with warfarin therapy compared to antiplatelet therapy. The purpose of this study is to determine the effectiveness of warfarin therapy management performed by a new outpatient anticoagulation service, staffed by pharmacists and registered nurses.

Methods: This study has received Institutional Review Board approval. The retrospective chart review will be conducted utilizing an electronic medical record system to identify patients who were managed by the anticoagulation service during a period of five months. Patient data that will be collected includes dates of patient encounters, age, race, gender, primary indication for anticoagulation, international normalized ratio (INR) goal ranges, INR values, INR dates, hemoglobin levels, and reported adverse events. This data will be used to include patients over the age of 18 with an INR goal range of 2-3 or 2.5-3.5.
The primary objective is to determine if mean TTR for each INR goal range is greater than the 58% TTR threshold for warfarin efficacy. The TTR for each patient will be calculated using the Rosendaal method, using linear interpolation for INRs between patient encounters. The secondary objective is to assess the effectiveness of the warfarin maintenance adjustment protocol used by the anticoagulation service. This includes analyzing the percentage of protocol-adherent warfarin dose adjustments that result in the next INR being within goal range, the mean number of consecutive protocol-based warfarin dose adjustments made to achieve INR within goal range, and the incidence of reported adverse events.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-135

Poster Title: Use of rapid diagnostics to improve time to appropriate antibiotic therapy for Staphylococcus aureus bacteremia

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Purpose: Staphylococcus aureus bacteremia (SAB) is associated with longer hospital stays, increased costs, and mortality. Vancomycin is the antibiotic of choice for methicillin-resistant Staphylococcus aureus (MRSA) bacteremia. However, compared to beta-lactams, vancomycin is associated with an increase risk of mortality in methicillin-susceptible Staphylococcus aureus (MSSA) bacteremia. A real-time polymerase chain reaction assay detects and differentiates between MRSA and MSSA in the blood stream in approximately two hours, allowing the opportunity for appropriate therapy to be initiated more quickly. The purpose of this study is to evaluate the impact of rapid diagnostics on time to appropriate therapy for SAB.

Methods: This retrospective, comparative study has received Institutional Review Board approval. Electronic medical record reports will be utilized to identify patients over the age of 18 years who were diagnosed with SAB both before and after the polymerase chain reaction assay (PCR) testing was implemented. GeneXpert, the PCR assay utilized in this study, was incorporated by our institution in January of 2014. The pre-intervention group will consist of patients diagnosed with SAB prior to availability of the PCR assay. The post-intervention group will consist of patients with SAB following implementation of the PCR assay. The following patient specific data will be collected: age, gender, allergies, date of admission, date of discharge, antibiotic days, hours to appropriate therapy, and condition at discharge. For the primary outcome, this data will be utilized to determine if the use of a real-time PCR assay decreases time to appropriate therapy by at least 24 hours. Secondary outcomes will be compared between the groups and will include hospital length of stay (LOS), intensive care unit (ICU) LOS, time to appropriate antibiotic therapy in patients with MSSA bacteremia,

vancomycin utilization, duration of therapy targeted at gram-positive organisms, and in-house mortality.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-136

Poster Title: Failure rates of parenteral versus direct-oral anticoagulants in patients with malignancies

Primary Author: Samantha Maples, Via Christi Hospitals, Inc., KS; **Email:** samantha.maples@viachristi.org

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Jatandra Owens Birney

Purpose: It has been established that the presence of a malignancy equates with a significantly higher risk of developing venous thromboembolism (VTE). Although there is a large amount of evidence on warfarin and parenteral therapies for anticoagulation in the cancer population, there is little evidence on the use of direct-oral anticoagulants (DOACs) for preventing VTE, specifically compared to parenteral agents. The objective of this study is to evaluate whether DOACs had a similar efficacy and safety profile when compared to parenteral anticoagulants at preventing VTE in patients with malignancies.

Methods: An electronic medical record system will be queried to identify patients who were admitted to Via Christi Hospitals Wichita, Inc. from October 1st, 2014 to September 30th, 2016 with a home medication of either a parenteral (low-molecular- weight heparin or fondaparinux) or direct-oral anticoagulant (dabigatran, rivaroxaban, apixaban, or edoxaban) and also had an active cancer diagnosis. Patients will be identified who failed their initial anticoagulant as defined by one of the following: acute VTE diagnosis or those discharged on a different anticoagulant than they were admitted on. Patient-specific data that will be collected includes, but is not limited to: demographic information, hemodialysis or peritoneal dialysis orders, home and discharge medications, serum creatinine, platelets, hemoglobin, comorbid conditions, VTE and cancer diagnoses, and inpatient-mortality rate. The primary endpoint for this retrospective review is failure rate of anticoagulation treatment for the prevention of VTE for both the DOAC and parenteral anticoagulant groups. The secondary efficacy endpoint includes failure rates for hematologic versus solid tumor malignancies. Additionally, secondary safety endpoints include the occurrence of major bleeds and all-cause inpatient deaths in each treatment group. This retrospective study is approved by the Institutional Review Board.

Results: In progress.

Conclusion: In progress.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-137

Poster Title: Analysis of tranexamic acid use in massive blood loss for gastrointestinal bleeding and postpartum hemorrhage with a focus on 24 hour mortality

Primary Author: Michael Reichert, Wesley Medical Center, KS; **Email:** mreichert42@gmail.com

Additional Author (s):
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Purpose: The purpose of this study is to assess if there is a difference in 24 hour mortality in patients receiving tranexamic acid (TXA) during a massive blood transfusion (MBT) due to postpartum hemorrhage (PPH) or gastrointestinal bleeding (GIB) as compared to those that did not receive tranexamic acid.

Methods: The study protocol for this non-interventional, single center, retrospective, chart review is under review by the Wichita Medical Research and Education Foundation Institutional Review Board. Patients who are greater than 18 years of age diagnosed with GIB or PPH who received MBT and were included in the massive blood transfusion data set up to August 2016 will be included. Patients will be excluded if trauma was the cause of massive blood loss or if the patient received aminocarproic acid. Data collection will include age, gender, cause of massive blood loss, anticoagulant usage, TXA administration, total amount of blood products received, mortality at 24 hours, survival to discharge, prothrombin complex concentrate (PCC) administration, surgical intervention to control bleeding and TXA administration prior to activation of MBT. The primary outcome of this study is to compare the mortality at 24 hours in patients that received TXA as part of the MBT pathway versus those that did not receive TXA. Secondary outcomes include comparison of the use of PCC, patient survival to discharge, amount of blood products administered and surgical intervention in patients that received TXA as part of the MBT pathway versus those that did not receive TXA. Patient demographics will be assessed using descriptive statistics. Nominal data will be compared using Fisher's exact or Chi squared. Continuous data will be compared using student's T test.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-138

Poster Title: Provider utilization of pharmacy progress notes within a computerized physician order entry system

Primary Author: Megan Williams, Wesley Medical Center, KS; **Email:** megan.williams7@wesleymc.com

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Purpose: Wesley Medical Center (WMC) is a 760 bed tertiary care facility with a clinical pharmacy staff of 15 satellite pharmacists daily. Pharmacists currently write electronic medication management notes, which are available for providers to view and implement recommendations for improved patient care as necessary. The aim of this project is to assess if providers are reading the medication management notes written by pharmacists at WMC. Other outcomes include assessing the providers' viewpoints on the utility of pharmacist progress notes, determining if providers are implementing recommendations from these notes and evaluating the best forms of provider-pharmacist communication.

Methods: This quality improvement project will include all physicians and mid-level practitioners that practice at WMC. Pediatric, neonatology, and obstetrics-gynecology (OB-GYN) providers will be excluded. This project will be survey based and will occur between October and December 2016. The survey will be distributed at executive meetings as well as electronically via the WMC physician relations department. Survey results will be analyzed and descriptive statistics will be utilized to present survey results.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-139

Poster Title: Potential risk factors associated with repeated systemic corticosteroids after a single dose of dexamethasone during acute asthma exacerbations

Primary Author: Coty Tunwar, Wesley Medical Center, KS; **Email:** coty.tunwar@wesleymc.com

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Purpose: Asthma is a major cause of morbidity and mortality in pediatric patients. Corticosteroids, along with bronchodilators, are the mainstay of therapy in acute asthma exacerbations. Studies have shown that a single dose of dexamethasone is non-inferior to prednisone and offers several advantages like a shorter course of therapy and fewer side effects. However, patients occasionally need additional doses of systemic corticosteroids after a single dose of dexamethasone. The purpose of this study is to evaluate risk factors that may increase the need for additional systemic corticosteroids after a single dose of dexamethasone during acute asthma exacerbations.

Methods: The study is a single center, retrospective chart review of approximately 60 patients that received a onetime dose of dexamethasone for acute asthma exacerbation between January 2015 and September 2016. Patients will be included if they were less than18 years of age, admitted for an acute asthma exacerbation, and received a single dose of dexamethasone. Patients will be excluded if they had any chronic pulmonary disease (i.e. cystic fibrosis, bronchopulmonary dysplasia), or systemic corticosteroid use within two weeks prior to admission. The primary outcome is to identify risk factors that may lead to additional doses of systemic corticosteroids. Secondary outcomes include length of stay and adverse effects observed from the additional doses. Data collection will include age, gender, asthma severity score on admission, asthma severity classification, tobacco smoke exposure, history of seasonal allergies, history of premature birth (less than 34 weeks gestations), and hospitalizations within the last year. In addition, corticosteroid therapy (total doses, strength), length of stay and adverse effects will also be examined. Data collection will commence once Institutional Review Board approval is obtained.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-140

Poster Title: Estimated aluminum exposure through parenteral nutrition in neonatal morbidities.

Primary Author: Megan Fortenberry, Wesley Medical Center, KS; **Email:** meganwfortenberry@gmail.com

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Jacob Morton

Purpose: The purpose of this study is to determine if estimated aluminum exposure as part of parenteral nutrition is increased in neonates with poor outcomes, including necrotizing enterocolitis, rickets/osteopenia, and/or seizures.

Methods: This is a single center, retrospective case-control study of approximately 180-225 neonatal intensive care unit patients, including both cases and controls. Patient selection will occur between January 1, 2015 and June 30, 2016. Patients will be included as cases if they have a diagnosis of necrotizing enterocolitis, rickets/osteopenia, or seizures and have received at least 14 days of parenteral nutrition. Patients will be excluded if they are diagnosed prior to parenteral nutrition exposure, received less than 14 days of parenteral nutrition, or were small for gestational age. Patients who meet the inclusion criteria will be matched 1:2 by gestational age and birth weight to control patients without listed diagnoses for comparison. Controls will be selected using a random sequence generator. Mean total aluminum exposure for the first 14 days of parenteral nutrition will be calculated using manufacturer label information. Differences in mean aluminum exposure between cases and controls will be analyzed using a Student's t-test. Subgroup analysis in those with renal impairment or cholestasis will also be conducted using Student's t-test. If a significant difference is found between cases and controls, a classification and regression tree (CART) analysis will be conducted to determine the doses (mcg/kg/day) to which more cases were exposed.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-141

Poster Title: Levetiracetam versus lorazepam as abortive therapy in breakthrough seizures in pediatric patients

Primary Author: Jordan Snyder, Wesley Medical Center, KS; **Email:** jordan.snyder@wesleymc.com

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Purpose: Two-thirds of patients will become seizure-free following the first or second antiepileptic drug regimen. The remaining patients may experience continuous seizures despite adequate treatment with antiepileptic medications, termed breakthrough seizures. Benzodiazepines are first line therapy for the acute management of seizures, although no comparison studies have been conducted evaluating breakthrough seizure management, only status epilepticus. The objective of this study is to determine if a difference in ability to terminate breakthrough seizures exists between levetiracetam and lorazepam in pediatric patients.

Methods: A retrospective, single site, chart review comparing efficacy of levetiracetam to lorazepam therapy for breakthrough seizures will be conducted. Breakthrough seizures will be defined as a patient experiencing seizures following a seizure-free period in which the patient did not need maintenance therapy or was adequately controlled on therapy. All patients aged 18 years and younger identified with breakthrough seizures, as listed in the electronic medical record, receiving either lorazepam or levetiracetam intravenously as needed will be included; only those who did not receive a dose of the study drug(s) will be excluded. The following will be collected from the electronic medical record: age, name of home antiepileptic medication(s), name, strength, number of doses of study drug(s) received, response to study drug(s), additional antiepileptic medication given, adverse effects following administration of study drug(s), and medication(s) that the patients received which may lower seizure threshold. Data collection will begin pending IRB approval. Chi-squared tests will be utilized to compare response rates to study drugs, rate of adverse events, and need for additional antiepileptic medications.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-143

Poster Title: Comparison of Sepsis-3 criteria versus SIRS criteria in screening patients with sepsis in the emergency department

Primary Author: Brian Gilbert, Wesley Medical Center, KS; **Email:** brian.gilbert.pharmd@gmail.com

Additional Author (s):
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Purpose: Systemic Inflammatory Response Syndrome (SIRS) symptoms and suspected infection is how we have identified sepsis since 1991. Previous literature has shown that with this criteria patients are misidentified as septic while omitting patients who are septic. A new consensus of sepsis and septic shock (Sepsis-3) was recently developed by collaborative groups. Sepsis-3 utilizes the Quick Sepsis Related Organ Failure Assessment (qSOFA) as a way to identify patients at risk for development of sepsis. The purpose of this study is to compare Sepsis-3 versus SIRS criteria in screening patients who are diagnosed or treated for sepsis from the emergency department (ED).

Methods: This is a single center, retrospective, cohort study of approximately 100 patients admitted to Wesley Medical Center (WMC) through the ED with suspected sepsis. Patients greater than 18 years old admitted through the ED who received antibiotics within 48 hours of admission will be included. Retrospective data will be generated beginning from 8/01/16 backwards until the study participation number is met. Patients will be stratified into four different groups: only qSOFA positive, only SIRS positive, qSOFA and SIRS positive, qSOFA negative and SIRS negative. Data to be collected by the research team will include: age, gender, arrival time to ED, SIRS criteria data, qSOFA criteria data, time in which the patient received antibiotics, serum lactate values, mortality data, and ICD code for sepsis.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-144

Poster Title: Assessing adherence to new pediatric traumatic brain injury (TBI) pathway

Primary Author: Greg Scott, Wesley Medical Center
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Purpose: Pediatric traumatic brain injury (TBI) is a significant contributor to morbidity and mortality in the United States. Improved outcomes have been shown when an evidence based protocol is implemented. At Wesley Children's Hospital, a pediatric traumatic brain injury pathway was developed using current literature and an intervention log was created. The purpose of this quality improvement project is to review the pediatric TBI management pathway and intervention log for adherence and ease of use.

Methods: This is a single site, observational study assessing adherence to the pediatric TBI clinical pathway following implementation in July 2016. Pediatric patients admitted to the PICU for TBI between the dates of July 1, 2016 to April 1, 2017 will be included in the study. The primary outcome is to assess deviations from the pediatric TBI clinical management pathway and the secondary outcome is to determine if aspects of the pediatric TBI clinical management pathway are difficult to follow and need adjustment. The following data will be collected: age, history of seizures, Glasgow coma score, cause of traumatic brain injury, home medications, medications given, core temperature, end tidal carbon dioxide, oxygen saturation, hemoglobin, glucose, serum sodium, partial pressure of carbon dioxide in arterial blood, intracranial pressure, cerebral perfusion pressure, central venous pressure, mean arterial pressure, continuous electroencephalogram, head of bed position, temperature management system, art line, and intervention log. All data will be recorded without patient identifiers and maintained confidentially. The data will be reviewed to assess adherence and ease of use.

Results: n/a

Conclusion: n/a

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Evaluative Study

Session-Board Number: 10-145

Poster Title: Implementing a hydromorphone 'free' Emergency Department

Primary Author: Lindsey Steffee, Carroll Hospital Center, MD; **Email:** lsteffee@carrollhospitalcenter.org

Additional Author (s):
Tamara Kozlowski

Purpose: Emergency Department providers are inundated with patients. It is frequently an area where people present for secondary gain. Opioid abuse has become a worldwide problem and it is estimated that 1.9 million people in the United States meet criteria for abuse of prescription painkillers. A 2014 statistic estimated that 4.3 million Americans used prescription painkillers for non-medical uses in the last month. Among individuals that abuse illicit and prescription substances, the thought is intravenous hydromorphone gives a better high. Carroll Hospital Emergency Department decided to try and reduce the misuse of hydromorphone in the Emergency Department.

Methods: The institutional review board at our institution does not review medication use evaluations. A policy was developed to discourage the use of intravenous hydromorphone in the Emergency Department. A multidisciplinary committee made up of pharmacists, nurses, care navigators and providers created and implemented the policy. Pharmacy created order sets for intravenous morphine and hydromorphone to encourage appropriate dosing and to attempt to limit the use of intravenous hydromorphone. Beginning in December 2015, intravenous hydromorphone could only be prescribed in 6 specific patient situations: sickle cell disease, cancer or terminal illness, biliary disease, kidney stones, multiple trauma and those with a true morphine allergy. In addition, when used, intravenous hydromorphone was now administered by intravenous infusion over 15 minutes instead of by intravenous push. This was done to decrease the chance of the patient getting a “rush” from the medication. Data was collected on the number of doses of morphine, fentanyl, hydromorphone and ketorolac for the quarter before the policy implementation and the first 2 quarters after implementation. Pain satisfaction scores were also analyzed before and after the policy was implemented. All medications discussed in this abstract are the intravenous forms of the drug, no oral forms of these medications were analyzed.

Results: Table 1 shows a 91 percent decrease in hydromorphone doses in quarter two compared to quarter one and a 50.9 percent increase in morphine. There was a 87.4 percent decrease in hydromorphone use and a 43.7 percent increase in morphine use when comparing quarter three to quarter one. Table 2 demonstrates a 3.64 percent decrease in ketorolac use during quarter two compared to quarter one. There was also a 7.1 percent increase of ketorolac use from quarter two to quarter three. Data was compiled from 25 patients who frequently visited the Emergency Department with pain related complaints before the policy implementation. The selected patients presented frequently with chief complaints of back or abdominal pain. The number of visits by this group was followed for two quarters after policy implementation. Shown in Table 3, a 74.5 percent decrease in visits occurred when comparing quarter two to quarter one. There was a 20 percent increase from quarter two to quarter three. The percentage of Emergency Department patients that rated their pain satisfaction scores as "very good" did not significantly change after the policy implementation. The number of total patient visits to the Emergency Department across all three quarters did not vary significantly.

Conclusion: When analyzing the number of visits from the sample patient group there was a 69.4 percent decrease in visits. The implementation of the hydromorphone free Emergency Department policy was successful in significantly decreasing the number of suspicious behavior visits. As represented by the data, the physicians were compliant with maintaining the policy implementation throughout the quarters. It should also be noted that the percentage of patients rating their pain satisfaction scores as "very good" did not change after the policy implementation. This leads us to conclude that pain medications, other than hydromorphone, can be used successfully for pain management in the Emergency Department.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-146

Poster Title: Medication use evaluation of phytonadione in a community hospital

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Purpose: Phytonadione is a synthetic form of vitamin K that is indicated for the prevention and treatment of warfarin-induced hypoprothrombinemia. Inappropriate use of phytonadione can lead to excessive reversal causing sustained subtherapeutic INR putting patients at risk for thromboembolic complications. Conversely, inadequate dosing of phytonadione can lead to ineffective reversal, putting patients at risk for bleeding. The purpose of this study is to investigate the appropriateness of phytonadione use at Frederick Memorial Hospital and to assess its impact on patient outcomes by looking at time to reach therapeutic INR, and thromboembolic or bleeding complications post phytonadione administration.

Methods: The study is a retrospective chart review of patients who were admitted to Frederick Memorial Hospital (FMH) between July 2015 and July 2016. Patients were identified by searching the pharmacy records for phytonadione medication orders. Inclusion criteria are as follows: at least 18 years old who received at least one dose of phytonadione via oral, intravenous or subcutaneous route during either the Emergency Department or inpatient admission at FMH. Exclusion criteria are as follows: any bleeding (minor and major) at the time of supratherapeutic INR, end of life care patients, an indication for immediate INR normalization (bleeding, surgery or other invasive procedures), severe liver disease, known bleeding diathesis or thrombolytic treatment within 48 hours of screening, platelet count less than 50000 per mcL, administration of phytonadione or plasma in 48 hour period prior to screening, known allergy/sensitivity to plasma or other contraindications to phytonadione. Appropriate use of phytonadione is defined as use of 2.5 to 5 mg oral phytonadione in patients with INR greater than 10.0. The primary outcome of this study is to investigate overall appropriate/inappropriate use of phytonadione. The secondary outcome of this study is to assess the impact of phytonadione use on patient outcomes by looking at time to reach

therapeutic INR post administration, and thromboembolic or bleeding events within 4 weeks of phytonadione administration.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-147

Poster Title: Appropriate use of clonidine patch with respect to dosing and safety

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Purpose: Clonidine patches can be beneficial for patients when used appropriately; however, improper use can increase costs to the hospital and has the potential to cause harm to patients. The purpose of this medication use evaluation is to evaluate appropriate use of clonidine patch within the hospital. Two major areas of concern for using clonidine patch is hypertensive urgency and opioid withdrawal. In both of these critical illnesses the crisis needs to be addressed urgently and cannot wait for clonidine patch to take effect in two to three days.

Methods: This study will be submitted to the Institutional Review Board for approval. The study is a retrospective chart review of patients admitted to the hospital and or emergency room between January 2016 and June 2016. Using the electronic medical record system a search for clonidine patch orders will be conducted to identify patients for inclusion in the study. Patients that will be included in the study need to be 18 years or older, seen in the emergency department or admitted to the hospital and receive a clonidine patch. The following data will be collected: age, gender, ethnicity, blood pressure, indication for clonidine patch, clonidine dose, emergency room visit and hospital admission data (post-initiation), current medications, changes in mediations (specifically antihypertensive medications). Data will be collected confidentially without patient identifiers. The reviewer will record data and analyze if clonidine patch is appropriate based on dosing, indication, and safety parameters. Safety parameters will include blood pressure and readmissions to the emergency department or hospital due to hypotension or syncope.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-148

Poster Title: Impact of a pharmacist-led medication reconciliation and discharge counseling in the inpatient setting on readmission rates and patient hospital experience

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Purpose: Currently, Holy Cross Hospital's medication reconciliation and discharge counseling process is managed by nursing and medical staff. Often times allergies, organ function, dosing, and other patient-specific parameters are overlooked in this fast-paced and complex setting. Additionally, medication history collection is often inadequate. Pharmacists can play an integral role in care transitions by facilitating the medication reconciliation process and conducting discharge counseling, drug therapy reviews, identifying potentially inappropriate medication therapy and serving as drug information experts to the patient. The purpose of this study is to determine the impact of a pharmacist-led medication reconciliation and discharge counseling service in patients.

Methods: This research project was submitted to the institutional review board for approval. Medication reconciliation and discharge counseling will be identified using the inclusion criteria for this study. A pharmacist will complete medication history after a nurse has completed medication history to allow identification of discrepancies. The discrepancies and drug therapy related issues will be compared and statistically analyzed. Discrepancies will be documented after review of the missing or incorrect: medication, dose, route of administration, frequency of administration, indication, allergies, and duplication. Adherence will be documented after reviewing the medications with the patients. The pharmacist will review the medications the patient is being discharged with, which include home medications and new medications they will begin or continue taking upon discharge. Any discrepancy in the medication regimen will be reconciled with the patient's physician and clarified. After the patient's medication list has been

reconciled, the patient will be counseled prior to discharge on the medication name, indication, strength, dose, frequency of administration, timing of administration, any special administration instructions, and the most common side effects they may experience. Patients who enroll in this study will receive a survey after receiving discharge counseling to assess the overall patient care experience. The survey will be collected before the patient is discharged. A follow-up call will occur within 3-7 days post-discharge to review medications and actions steps.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-149

Poster Title: Impact of a pharmacist-physician collaborative drug therapy management on hospital admission rates for high-risk patients managed in a health center for under-insured patients

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Purpose: Collaborative practice between a pharmacist and physician has been shown to improve care access, clinical outcomes, and overall healthcare costs. Currently, the readmission rate for under-insured patients is higher than insured patients at the health center. Additionally, population health measures could be optimized with the addition of pharmacists due to practice standardization, access to care, reducing preventable adverse drug events, and improving medication adherence. The purpose of this study is to examine whether the implementation of a team-based collaborative drug therapy service can decrease hospital and emergency room encounters and improve therapeutic outcomes for high-risk, under-insured patients.

Methods: The study was submitted to the Institutional Review Board for approval. The collaborative drug therapy management service between pharmacists and physicians at Holy Cross Health Aspen Hill Clinic has four protocols based on current evidence-based practice guidelines: hypertension, dyslipidemia, diabetes, and anticoagulation. This agreement allows the pharmacists to provide direct patient care including modifying therapy, ordering and reviewing labs, and medication teaching. Patients will be scheduled to be seen by a pharmacist for any medication issues related to the protocols. Patient at high risk for readmission with diabetes, hypertension, dyslipidemia, or anticoagulation needs would be identified by the case manager and referred to the pharmacist by the physician. The following data will be collected: patient age, medications, laboratory values, vital signs, and adverse reactions. The number of

visits with a physician, hospital admissions, and emergency room visits will also be collected. The patient's hospital and emergency room encounters, therapeutic outcomes, and access to care will be compared to data prior to the implementation of team-based collaborative drug therapy services. All data will be recorded without patient identifiers and maintained confidentially.

Results: n/a

Conclusion: n/a

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 10-150

Poster Title: Innovative pharmacy advancement initiative: measuring the value of pharmaceutical care through competency based performance metrics

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Purpose: ASHP's pharmacy advancement initiative (PAI) aims to optimize pharmacists' role in the care of patients. Holy Cross Health's Strategic Plan strives to provide innovative, high quality, and safe healthcare access to all populations. Pharmacy initiatives have been modified to ensure patient care is aligned to strategic initiatives and practice standards, along with performance metrics used to evaluate the value of services pharmacists provide. The purpose of this study is to evaluate pharmacist performance using key clinical interventions such as anticoagulation monitoring, antibiotic streamlining, emergency response, IV to PO conversion, and medication teaching, and pharmacokinetic consults.

Methods: Each month for the upcoming year 2016-2017, the clinical interventions made by pharmacists will be analyzed for each performance metric quarterly. Once the data is collected for each metric, it will be combined for an annual report to be compared to the results collected in 2015-16. In the previous year the significant performance improvements included antibiotic streamlining, emergency and rapid response team, and pharmacokinetic consults. The key performance metrics will be used to measure individual performance in alignment with organizational targets. Performance metric results will provide a balance scorecard on areas to be improved by individuals and overall for the pharmacy department. The competency performance will measure alignment with pharmacy activities with organizational targets by standardizing practice standards and define the vision for success in daily performance including measurable targets. The study will provide measurable outcomes that can determine barriers to achieving the measurement target and prioritization of services.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-151

Poster Title: Impact of an antimicrobial stewardship program on clinical outcomes and antibiotic consumption at a community teaching hospital

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Purpose: The CDC, IDSA and TJC all recognize that implementation of antimicrobial stewardship programs (ASPs) is a promising strategy to reduce clinical variation and collateral damage. Effective ASPs may be able to improve the bottom line by reducing length of hospital stay, readmission rates and promote cost savings. In a hospital setting where delivery of exceptional quality care is epicenter of practice, continuous improvement through innovation in clinical and operational excellence is crucial. The objective of this study is to assess the impact of an established ASP on clinical outcomes and antibiotic consumption at a community teaching hospital.

Methods: The research project has been submitted to the Institutional Review Board for approval. The electronic medical health records and the antibiotic surveillance software will be used to identify patients who were treated for one or more of the following conditions: urinary tract infection, pneumonia, staphylococcus aureus bacteremia, skin and soft tissue infection. The following data will be collected: age, gender, type(s) of antibiotics used for treatment, renal function tests, microbiology data, reported adverse events and resistance patterns at the hospital. All health records will be de-identified and maintained under password-protected encryption. Records meeting the inclusion criteria will be reviewed and analyzed by the principle investigator for the following: days of antibiotic therapy, consumption of antibiotics, number of adverse events associated with antibiotic use, compliance to evidence-based national guidelines, length of hospital stay, resistance rates and overall cost expenditures.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-152

Poster Title: Implementation of a pharmacist-driven medication counseling program

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Purpose: Hospitalizations often involve discontinuity in care and multiple changes in medication regimens which can lead to adverse drug events (ADEs) and avoidable health care utilization without adequate patient education upon discharge. Patients on high risk medications are at higher risk for ADEs which can lead to non-adherence and may result in hospital readmission. Nurses currently perform discharge education at this hospital and coordination with pharmacists is anticipated to improve patient outcomes. The impact of pharmacist involvement at hospital discharge will be measured by Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores and reduction in 30-day all-cause readmissions.

Methods: A nursing discharge education pilot using the teach-back method was initiated on a 30-bed medicine unit (2 Pavilion) at Howard County General Hospital in February 2016. All nurses working on this unit are expected to be trained on the teach-back approach for medication counseling through a video and will be observed in practice. Initial results demonstrated increased HCAHPS scores in the medication domain. In order to provide counseling for high risk patients, a pharmacist will provide discharge education for all eligible patients that meet one of the following criteria: (1) age of 65 and older or on greater than 10 medications or (2) on a high-risk medication. Nurses will identify these patients for pharmacist intervention, or discharge counseling. This study was submitted to the Institutional Review Board for exempt review. Results of this study will be compared to the data from prior to pharmacist involvement to assess outcomes including readmission rates and HCAHPS scores. The goals of the study are to demonstrate that discharge counseling for high risk patients by

pharmacists improves quality and safety of care in order to validate expansion of this service to the entire institution.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-153

Poster Title: Influence of a 90 day, $0 mail-order Medicare Part D (MPD) benefit design on medication adherence

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Purpose: Poor medication adherence can result in unnecessary suffering, negative disease state outcome and possible increased health care services, leading to overall increased health care costs. Interventions to lower barriers to medication adherence can include prescribing 90 day medication supplies. This study evaluates Medicare Part D members' medication adherence as measured by proportion of days covered (PDC) 8 months prior and 8 months post the implementation of a $0 90 day mail-order copay benefit. The study will also assess the impact on members' utilization of the mail-order pharmacy.

Methods: The Institutional Review Board has approved this retrospective claims analysis. On January 1, 2016, Kaiser Mid-Atlantic States (KPMAS) implemented a new pharmacy benefit design for Medicare Part D direct pay members. This design implemented a $0 copay for 90 day supply of preferred generic medications filled at mail-order. The 2015 pharmacy benefit design for Medicare Part D direct pay members included copays ranging from $10-$14 per 90 day supply. A retrospective claims analysis will be performed using claims data extracted from the Kaiser Mid-Atlantic Pharmacy Data Warehouse. This data warehouse contains claims-based records of all outpatient and mail order pharmacy prescriptions filled at Kaiser and participating network pharmacies for Kaiser Mid-Atlantic members. Prescriptions filled for Medicare Part D direct pay members for drugs identified as preferred generics on the Medicare Part D formulary from April 1, 2015 to August 31, 2016 will be extracted. Adherence rates will be calculated using proportion of days covered (PDC) prior to and after the implementation of the $0, 90 day copay to determine differences in adherence rates. Additionally, the pharmacy location type used by the member to fill their medications (i.e. mail order, network, and Kaiser outpatient pharmacies) will be compared prior to and after the implementation of the new pharmacy benefit design.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-154

Poster Title: Retrospective review on effectiveness of seizure control in patients switched from brand to generic antiepileptic drugs in an integrated healthcare delivery system

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Purpose: Concerns have been raised about variances in bioavailability between brand and generic antiepileptic formulations which may result in loss of seizure control or drug toxicity after conversion. The American Academy of Neurology and the Epilepsy Foundation support therapeutically equivalent generic substitution of antiepileptic drugs. In 2012, Kaiser Permanente of Mid-Atlantic States (KPMAS) decided to reduce the use of non-formulary brand antiepileptic drugs when therapeutically equivalent generics are available in order to maintain the affordable, high quality care it provides to its members. This study will determine the effects of switching from brand to generic antiepileptic medications in this healthcare setting.

Methods: This study has been approved by the KPMAS Institutional Review Board (IRB). A retrospective review of 252 patients who were converted from brand name to generic formulation of the following antiepileptic drugs will be completed: Carbatrol to carbamezapine ER, Depakene to valproic acid, Depakote to divalproex sodium DR, Depakote ER to divalproex sodium ER, Felbatol to felbamate, Keppra to levetiracetam, Keppra CR to levetiracetam XR, Lamictal to lamotrigine, Neurontin to gabapentin, Tegretol to carbamazepine, Tegretol XR to carbamazepine XR, Topamax to topiramate, Trileptal to oxcarbazepine, and Zonegran to zonisamide. All patients who were converted to generic formulations will be included in the study. Patients will be excluded from review if they are less than 18 years of age or if follow up data is not available. Demographic information such as patient medical record number, age, gender, ethnicity, height and weight will be collected from KPMAS electronic records. Clinical information to be collected are as follows: drug strength, drug dose, generic manufacturer, date when current regimen was initiated, date when therapy with generic formulation was initiated, most recent pre-conversion blood level of brand name antiepileptic, post-conversion

blood level and the date which it was obtained, date of last seizure episode pre-conversion, most recent pre/post conversion liver function tests, most recent pre/post conversion renal panel, and most recent pre/post conversion CHEM7.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-155

Poster Title: Evaluating the clinical pharmacists' impact on medication adherence and clinical outcomes in type 2 diabetic patients

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Purpose: Intense glycemic management is associated with fewer incidences of retinopathy, nephropathy, and neuropathy in type 2 diabetic patients. An interdisciplinary approach to diabetes management has proven to be beneficial on suboptimal glycemic control and adherence rates. In June of 2016, all primary care clinical pharmacist at Kaiser Permanente Mid-Atlantic States started type 2 diabetes management panels. This study aims to evaluate the impact of clinical pharmacist management on medication adherence rates, glycated hemoglobin (HgbA1C) and hospitalizations rates associated with diabetic complications as a result of being enrolled into a pharmacist-managed diabetic program.

Methods: A retrospective chart review of 100 type 2 diabetic patients assigned to one clinical pharmacist will be conducted. The study population will serve as their own control. Data will be collected from January 1, 2016 – May 30, 2016, before the panel was enrolled into a pharmacist-managed diabetes program, compared to data from June 1, 2016 – November 30, 2016, after enrollment. Prescription drug claims for the following diabetic agents, statins, angiotensinogen converting enzyme (ACE) inhibitors, and angiotensin II receptor blockers (ARBs) will be reviewed: acarbose, glipizide, Humalog vial, Humulin N 70/30, Humulin N, Humulin R Vial, Lantus Vial , metformin HCL, metformin ER, pioglitazone HCL , atorvastatin calcium, lovastatin, pravastatin Sodium , simvastatin, captopril, enalapril maleate, lisinopril, lisinopril and hydrochlorothiazide, losartan potassium, losartan potassium and hydrochlorothiazide. Glycated hemoglobin (HgbA1C) data and hospitalization admissions associated with diabetic complications, between January 1, 2016 to May 30, 2010 and from June 1, 2016 to November 30, 2016 will be reviewed for each study participant. All uncontrolled

type 2 diabetic patients who were not previously enrolled into the clinical pharmacist managed program with a glycated hemoglobin (HgbA1C) of ≥8% will be included in this study. Patients will be excluded from this study if they are less than 18 year of age, pregnant, or have been hospitalized for more than 1 week.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-156

Poster Title: Evaluating outcomes from a pilot pharmacy initiative to limit duration of empiric ciprofloxacin and vancomycin use in a small community hospital

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Purpose: Ciprofloxacin and vancomycin are commonly used as empiric therapy for various infections. However, their widespread use is associated with an increased risk of antimicrobial resistance. Inappropriate use of these agents may lead to development of extended-spectrum beta lactamase (ESBL) producing pathogens, methicillin-resistant Staphylococcus aureus (MRSA), and vancomycin-resistant Enterococcus (VRE). To limit empiric, broad-spectrum ciprofloxacin and vancomycin use, a pilot pharmacy initiative was implemented to contact providers after 72 hours of negative cultures and recommend de-escalating or discontinuing therapy. This study evaluates antibiotic duration after implementation of this initiative and the impact of pharmacy intervention for antibiotic streamlining.

Methods: This study will be submitted to the Institutional Review Board for approval prior to initiation. A retrospective chart review will be performed for randomly selected eligible patients. Inclusion criteria include patients age ≥18 years who received oral or intravenous ciprofloxacin and/or vancomycin as initial antibiotic therapy between June 1, 2016 and March 31, 2017. Patients with a length of stay less than 72 hours or who received another antibiotic prior to initiation of ciprofloxacin and/or vancomycin will be excluded. Outcomes from before implementation of the pharmacy pilot will be compared to those after implementation to evaluate the impact of pharmacy intervention. Data collection will include patient demographics, antibiotic indication, regimen, duration, microbiology culture results (if positive cultures are available), vancomycin levels, occurrence of adverse drug reactions, incidence of antibiotic de-escalation, and the outcomes of pharmacist intervention. Study outcomes will evaluate mean duration of antibiotic use between the pre-pilot and post-pilot group, the result of pharmacist intervention (de-escalation or discontinuation after a targeted intervention at 72

hours compared to conventional interventions in the pre-pilot group), and the incidence rate for adverse events and/or supratherapeutic vancomycin trough levels in patients who continued empiric antibiotics for more than 72 hours with negative cultures.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-157

Poster Title: Evaluating the effect of a sepsis order set on time to first dose of antibiotics after sepsis diagnosis in a community teaching hospital

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Purpose: According to the Surviving Sepsis Campaign guidelines, once a diagnosis of sepsis has been established, the patient should receive appropriate broad-spectrum antibiotic therapy within sixty minutes. Each hour delay in administration is associated with a measureable increase in mortality. The hospital implemented a sepsis order set to help decrease the time from antibiotic prescribing to administration. This order set includes recommended empiric antibiotic regimens based on suspected source of infection.
Thus, the objective of this study is to evaluate outcomes from implementation of the order set on time to antibiotic administration in septic patients.

Methods: The study will be submitted to be approved by Institutional Review Board. This study will be conducted as a retrospective chart review comparing time from sepsis diagnosis to first dose of antibiotics before and after order set implementation. Adult patients (age 18 and older) who were diagnosed with sepsis from July 2014 to July 2016 will be eligible for inclusion. Patients will be excluded if there is insufficient time documentation for evaluation. The investigation will minimize the use of protected health information to maintain patient confidentiality. Data collection will include: patient demographics and survival data and total time to antibiotic administration including the following stepwise time points: time from sepsis diagnosis to antibiotic order, time from order to verification by pharmacy, time from verification to nurse administration. Antibiotic class, duration of use, and the appropriateness of antibiotic de-escalation based on microbiology data will also be collected for the study. The primary outcome will be to determine if the sepsis order set helps improve the total time from diagnosis of sepsis to antibiotic administration. Secondary outcomes will be to identify the rate-

limiting step and evaluate the appropriateness of antibiotic class used, duration, and de-escalation of the antibiotics.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-158

Poster Title: Evaluating outcomes after implementation of a new vancomycin dosing protocol at a small community hospital

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Purpose: Vancomycin is commonly used to treat serious infections, including those caused by methicillin-resistant Staphylococcus aureus (MRSA). Despite the development of dosing protocols and close therapeutic monitoring, the incidence of supratherapeutic trough levels and increased risk for nephrotoxicity remains a concern. Given prior study results from hospital drug use evaluations of vancomycin, the pharmacy dosing protocol was revised to exclude loading doses, limit empiric use of every eight hour dosing regimens, and require closer monitoring for patients with hypoalbuminemia. This study aims to evaluate the patient outcomes from the new vancomycin dosing protocol compared to the previous vancomycin protocol.

Methods: This study will be submitted to the Institutional Review Board for approval prior to initiation. A retrospective chart review will be performed for randomly selected eligible patients. Inclusion criteria include patients of an age greater than or equal to 18 years who have received vancomycin for at least 48 hours and had at least one vancomycin level available during hospitalization. Patients with renal impairment, defined as a creatinine clearance of less than 20 mL/minute or those receiving concomitant nephrotoxic medications will be excluded from the study. Data collection will include patient demographics, concomitant antibiotics, vancomycin regimen and levels, renal function at baseline and during hospitalization, and adverse effects. Study outcomes will evaluate the incidence of subtherapeutic, therapeutic, or supratherapeutic vancomycin levels at lab draws and the percentage of patients experiencing acute kidney injury or the occurrence of other adverse effects. Outcomes after implementation of the new dosing protocol will be compared against a historical control group with the prior protocol.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-159

Poster Title: Medication use evaluation of cangrelor at a 292-bed acute care community hospital

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Purpose: Cangrelor is an intravenous potent and predictable inhibitor of ADP-induced platelet aggregation with an immediate onset of action used in percutaneous coronary interventions (PCI). Prior to the Food and Drug Administration (FDA) approval of cangrelor in June 2015, the previously existing P2Y12 platelet inhibitors have several limitations such as delayed onset and offset of action, inter-individual variability, and only oral availability. Since the addition of cangrelor to the formulary, its utilization has not been monitored for appropriate indication, dosing, and transition to an oral P2Y12 platelet inhibitor. The purpose of this study is to assess the appropriateness of cangrelor use.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients who were administered cangrelor since its addition to the formulary in August 2015. The following information will be collected: indication for use, weight, dosing, and timing of oral P2Y12 platelet inhibitor initiation. In addition, provider documentation and catheterization laboratory reports will be reviewed if there is reason to clarify any of the aforementioned information. Only the minimum necessary information will be collected, and all information will be collected without patient identifiers and maintained confidentially. The information will be evaluated for appropriate use based on three criteria: [1] for bridging those with high thrombotic risk who need to interrupt oral agents, [2] for those with acute coronary syndromes, particularly ST-elevation myocardial infarction (STEMI), intended for PCI where the oral route is suboptimal, and [3] for those undergoing urgent PCI who were not adequately loaded with an oral P2Y12 inhibitor and are not receiving a glycoprotein IIb/IIIa inhibitor. In addition, the reviewers will evaluate whether the weight-based dosing for the bolus and infusion and transition to an oral P2Y12 platelet inhibitor were performed properly.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-160

Poster Title: Evaluation of 4-factor prothrombin complex concentrate vs 3-factor prothrombin complex concentrate in warfarin and factor Xa inhibitor reversal

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Purpose: The 2012 American College of Chest Physicians antithrombotic guidelines suggests a preference for the use of 4-factor prothrombin complex concentrate (PCC) for reversal of warfarin therapy-associated major bleeding with no recommendation for or against the use of 3-factor PCC. In addition, current guidance for the practical management of direct oral anticoagulants suggests that 4-factor PCC should be considered for factor Xa inhibitor reversal. There is a lack of high-quality evidence to support 4-factor PCC as a reversal agent over others, such as 3-factor PCC. The objective of this study is to evaluate the effectiveness of 4-factor PCC versus 3-factor PCC.

Methods: The study has been approved by the Institutional Review Board. A retrospective review of the electronic medical record will screen patients who have received a dose of 3-factor PCC for warfarin or factor Xa inhibitor reversal. Then a prospective chart review will be conducted and identify patients who have received a dose of 4-factor PCC for warfarin or factor Xa inhibitor reversal. The following data will be collected: patient age, gender, weight, height, hemoglobin, hematocrit, platelets, INR, aPTT, PT, anti-factor Xa level, anticoagulation indication, type of bleeding, bleeding reversal adjuncts (i.e. transfusions, blood factors, fresh frozen plasma, platelets, vitamin K, transexamic acid, desmopressin, aminocaproic acid), type of PCC used, number of PCC doses used, duration of hospitalization, and adverse events. Hemostatic efficacy will be determined with a rating scale used in previously published studies. All data will be recorded without patient identifiers and confidentiality will be maintained. Reviewers will determine successful reversal in warfarin-associated major bleeding by an INR reduction to less than 1.5 and successful reversal in factor Xa inhibitor associated major bleeding by achieving an effective hemostatic efficacy rating. Standardized difference will be calculated for baseline characteristics and any imbalances between groups will be adjusted

through logistic regression. Statistical analysis of the primary outcome will be determined with Fisher's exact test. Secondary outcome analysis will be determined with a 2-sample t-test.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-161

Poster Title: Effect of probiotic use in prevention of hospital-acquired Clostridium difficile infection in a community hospital

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Purpose: Hospital-acquired Clostridium difficile infection (CDI) has been associated with increased costs in health care systems and increased rate of morbidity and mortality. CDI is increased in hospitalized patients receiving broad-spectrum antibiotics such as cephalosporins, fluoroquinolones, penicillins, and clindamycin. Probiotics are live organisms that have been proposed to prevent CDI. Probiotics can maintain or restore gut flora during or after antibiotic treatment. However, studies have shown conflicting results regarding the use of probiotics in prevention of CDI. The purpose of this study is to investigate if pharmacy-driven probiotic protocol will reduce the rate of hospital-acquired CDI.

Methods: This study will be done at Northwest hospital, a not-for-profit community acute care hospital located in Randallstown, Maryland with 254 beds. Pharmacy-driven probiotic protocol was implemented in March 2016 to reduce rate of HA-CDI. Patients were included in the study if they are ≥18 years of age, who receive oral or intravenous antibiotics Zosyn, Clindamycin, Ciprofloxacin, Levofloxacin, Ceftriaxone and Cefepime. Patients on chemotherapy, radiotherapy treatment and Leukopenia (WBC count less than 4000 mcg/L) will be excluded from the study. All patients are given 4 tablets of Floranex four times a day or Lactobacillus granules in the equivalent dose from the moment they begin antibiotic therapy per pharmacy protocol. Floranex contains a blend of lactobacillus acidophilus and lactobacillus helveticus (bulgaris). Each capsule contains 100 million live cells of lactobacillus species. Pre-intervention rate of HA-CDI from July 2015 to December 2015 will be compared to post-intervention rate of HA-CDI from July 2016 to December 2016. Primary objective will be rate reduction of HA-CDI with probiotic implementation at Northwest hospital.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-162

Poster Title: Analysis of predicted benefits through incorporating rapid identification testing for gram positive blood cultures in an acute care, community hospital

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Purpose: Traditional organism culture and identification can take 72 to 96 hours before susceptibilities are known, during which patients receive broad spectrum antibiotics that are potentially unnecessary. With new diagnostic technology, final species identification can occur within hours, allowing fewer doses of broad spectrum antibiotics, and earlier initiation of deescalated therapy. The primary objective is to determine the mean time to targeted antibiotic therapy for gram positive bacteremia following final cultures. Secondary objectives include evaluating the timing of antibiotic initiation relative to culture collection and speciation and performing a cost benefit analysis to evaluate the potential utility of rapid diagnostic testing.

Methods: Data regarding gram positive cultures collected from August 1, 2015 through July 31, 2016 will be reviewed in a retrospective analysis. Patients greater than 18 years of age with gram positive blood cultures will be included. Patients will be excluded if they were pregnant or incarcerated, had a polymicrobial bacteremia, did not receive antibiotic therapy during hospital stay, received treatment for another culture positive infection, had antibiotics administered prior to culture collection, or had a culture result that was known at the time of admission. Additionally, only the first positive culture from admission will be analyzed. Further, the number of patients unable to receive optimal deescalated treatment due to a documented penicillin allergy will be assessed. Data collection will include, but is not limited to, baseline demographics, identified pathogen, duration of broad spectrum therapy, time (hours) from culture collection to final speciation and susceptibility, resulting speciation as contaminant or infection, antibiotic(s) administered, and length of stay.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-163

Poster Title: Comparison of day and night shift sedative and analgesic use in a community hospital intensive care unit

Primary Author: Adriana Soto-Aviles, Suburban Hospital, MD; **Email:** adrianaesoto@gmail.com

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Purpose: Intensive Care Unit (ICU) patients commonly receive sedatives and analgesics for the management of pain, agitation, and delirium. Under-treating or over-treating pain or agitation can cause many complications. The 2013 pain, agitation, and delirium (PAD) guidelines recommend light levels of sedation to decrease duration of mechanical ventilation, ICU length of stay (LOS), and hospital LOS. Studies have shown more sedatives and analgesics are administered during night shifts compared to day shifts. We hypothesize that patients receive more sedatives and analgesics during night shifts at this community hospital, and that nursing education will reduce the amounts administered during both shifts.

Methods: This is a retrospective pre-post study in mechanically ventilated adult ICU patients who are in the ICU for greater than 24 hours, mechanically ventilated for greater than 12 hours, and received a sedative or analgesic. Quantitative data will be collected in two separate time periods. A retrospective chart review will occur evaluating sedative and analgesic use from October 1, 2016 to October 31, 2016. In December 2016, day and night shift ICU registered nurses (RN) will receive a survey and education regarding appropriate PAD management. A repeat retrospective chart review will occur evaluating sedative and analgesic use from January 1, 2017 to January 31, 2017. Using opioid and sedative dose equivalents, we will compare the amount of sedative and analgesics received and percentage of appropriate Richmond Agitation-Sedation Scale (RASS) and Confusion Assessment Method for the ICU (CAM-ICU) RN monitoring and documentation. The primary outcome of this study is a quantitative comparison of sedatives and analgesic doses administered during day and night shifts. Secondary outcomes include the percentage of patients at goal RASS, presence of delirium using the CAM-ICU, presence of coma, percentage of appropriate RASS and CAM-ICU documentation, in-hospital mortality, ICU and hospital LOS, and duration of mechanical ventilation. Statistical analysis will

include the two-sided Student's t-test and the Chi-square test, with a level of significance of 0.05.

Results: N/A

Conclusion: N/A

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-164

Poster Title: Extending a pharmacist directed diabetes self-management education (DSME) program in transitions of care in a medically underserved rural patient population

Primary Author: Tosin David, University of Maryland Eastern Shore/ Apple Discount Drugs , MD; **Email:** tdavid@umes.edu

Additional Author (s):
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Purpose: The community surrounding Apple Discount Drugs has a need for patients with diabetes upon hospital discharge to receive disease state education. The program is located on the rural Eastern Shore of Maryland, where there is a current lack of endocrinologists. In the near future the program will expand their role in providing care for all individuals covered under a large commercial payer. The objective of this study is to explore the role of the pharmacist as a physician extender by providing diabetes education in a community pharmacy setting in a medically underserved, rural patient population.

Methods: The pharmacy has an established accredited diabetes education program. Currently, the pharmacy has the ability to bill Medicare part B through a patient's durable medical equipment benefit and has received a limited provider status to bill for such services through its largest commercial payer.
The service community currently has a need for patients to gain diabetes education and follow up after a hospital discharge. Due to the documented success with clinical outcomes, the pharmacy has developed a program with the local third party payer to reach out to patients with diabetes complications post hospital discharge. As the program continues to expand their services, the role of the current community pharmacy resident will expand to providing individual care and follow-up for these patients.
Once a patient is referred for diabetes education, the pharmacist will obtain baseline laboratory results and the most recent history and physical from the referring provider. The pharmacist, with the help of the patient and the prescriber, will set patient specific goals. Primary outcomes for the authors will be looking at is the change in A1C from pharmacist directed diabetes self-

management education and number of referrals. Secondary outcomes are adherence to patient identified self-change behaviors and education completion rate.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 10-165

Poster Title: Cost-benefit analysis of bedside delivery service from a health-system perspective

Primary Author: Timothy Wu, University of Maryland Medical Center, MD; **Email:** timothywu@umm.edu

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Purpose: Patients who are being discharged from the hospital are typically given a new prescription to have it filled by their local pharmacy when returning home. However, a large majority of patients do not fill these prescriptions, leading to consequential clinical and financial impacts. The expansion of a bedside delivery service helps to not only provide patients with their new prescription medications, but also benefits the hospital both financial and clinical viewpoints. This study will conduct a cost-benefit analysis of expanding a bedside delivery service in a hospital system.

Methods: Retrospective data from current bedside delivery units will be used to develop a cost-benefit analysis to help determine the net benefit of implementation throughout the remaining units of the medical center. The primary benefit input in the model will be revenue generation from discharge prescriptions. Cost inputs include the pharmacy cost-to-dispense, cost of goods sold, and labor costs associated with delivery. Point estimates and distributions will be used for probabilistic sensitivity analysis using a Monte Carlo simulation to determine uncertainty around the net benefit calculation. Data will be then utilized to extrapolate feasibility of a bedside delivery service to other areas of the hospital and possibly other hospitals within the health system. Descriptive statistics will be used for prescriptions, patients, and financial variables.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-166

Poster Title: Empiric antimicrobial utilization for pneumonia among patients admitted to a neurocritical care unit

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Purpose: IDSA guidelines for pneumonia suggest to reassess the need for broad-spectrum empiric antibiotics at 72 hours after initiation. However, current literature reports that 50 percent or more of critically ill patients are continued on broad-spectrum antibiotics beyond 72 hours, despite no confirmed infection. Patients in the neurocritical care unit (NCCU) have a high incidence of central fevers, making it difficult to differentiate infectious fevers. We hypothesize that there is an even higher incidence of prolonged empiric antibiotic use without a guideline-based indication in this population. This study will evaluate empiric antibiotic use for the treatment of pneumonia in NCCU patients.

Methods: This study was submitted to the the Institutional Review Board and is pending approval. This is a retrospective chart review of adult patients who were previously treated with antibiotics for pneumonia in the NCCU. This study will utilize a convenience sample of patients meeting this criteria between November 2016 and August 2016. Transplant patients, patients with neutropenia, and patients who were treated with additional separate courses of antibiotics will be excluded. The primary objective is to determine adherence to guideline-based recommendations regarding indication to treat, selection of empiric antibiotic, 72-hour de-escalation, length of treatment with empiric antibiotics, and length of overall antibiotic treatment. Secondary objectives are to determine the number of patients treated for an infectious fever that meet the criteria for central fever, and to determine the incidence of adverse effects including nephrotoxicity, encephalopathy, and infection due to clostridium difficile. Data to be collected include demographic data, principal problem, admitting service, concomitant diseases, acute physiology and chronic health evaluation score (APACHE II), clinical pulmonary infection score (CPIS), infection probability score (IPS), center for disease control

criteria for pneumonia, previous exposure to antibiotics within 90 days, mechanical ventilation duration, antibiotic used and indication, dose and frequency of antibiotic, culture type and results, daily white blood counts and temperatures, incidence of adverse effects previously noted, and hospital disposition. Final data will be presented using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-167

Poster Title: Comparison of warfarin dosing requirements before and after intravenous inotrope initiation in acutely ill patients with advanced heart failure

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Purpose: Many patients that require anticoagulation with warfarin have several comorbid conditions, such as heart failure, which complicates warfarin dosing. As a result of decreased cardiac output and tissue perfusion, patients with advanced heart failure often have decreased warfarin dose requirements (due to the liver's impaired ability to metabolize the drug). However, heart failure patients requiring therapy with intravenous inotropes experience increased cardiac output. The purpose of this study is to determine the mean difference, if such a difference exists, between warfarin dose requirements pre- and post-inotrope initiation in patients with advanced heart failure.

Methods: This study will be a retrospective pilot analysis conducted at University of Maryland Medical Center (UMMC) of patients at least 18 years of age on chronic anticoagulation with warfarin and with a diagnosis of advanced heart failure with reduced left ventricular ejection fraction (HFrEF less than 40 percent) requiring long-term inotrope therapy who were admitted to the Advanced Heart Failure Service at UMMC between May 1, 2010 to May 1, 2015. Our goal sample size is approximately 50 patients. As this is a pilot study and similar data has not been published in the literature, we are unable to perform a power calculation to determine a precise sample size. We will exclude patients who were actively bleeding during admission, received intravenous inotrope therapy for an indication other than the management of symptoms in decompensated heart failure, were on intravenous inotrope therapy for short-term use only, had no indication for warfarin therapy, were newly started on warfarin and intravenous inotropes during the same admission, have a hereditary hypercoagulable state, or had a history of mechanical heart valve replacement. The data analysis plan includes the use of a Wilcoxon Signed-Rank Test will be used to measure a significant difference in the primary

outcome. Logistic regression will be used to control for confounding variables. A p-value of 0.05 will be used to define statistically significant difference between groups.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-168

Poster Title: Evaluation of discrepancies between noninvasive fibrosis testing methodologies and their impact on hepatitis C virus (HCV) treatment regimen

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Purpose: Selection of hepatitis C virus medication regimen is based on patients' genotype and degree of liver fibrosis. The liver biopsy is the gold standard for scoring liver fibrosis. Per the AASLD/IDSA guidelines, two noninvasive tests may replace the liver biopsy, but the scores must match. In practice, if two tests are performed, one test has been used to make treatment decisions even if the two tests are discordant. The objective of this study is to identify the rate of intrapatient discrepancy between the noninvasive tests and determine if that discrepancy affected regimen selection, treatment duration and potentially cure rates.

Methods: This retrospective analysis conducted at University of Maryland Medical Center (UMMC) includes all patients at least 18 years of age with a diagnosis of HCV regardless of genotype or treatment history, that had at least one of the noninvasive tests performed (FibroSure or FibroScan) and was seen in the UMMC Outpatient Infectious Disease Clinic between May 1, 2015 to July 31, 2016. The patient population will be a convenience sample of 250 patients selected by the noninvasive test completed during this time frame. The primary end-point is to determine the frequency of intrapatient discrepancy between two noninvasive scoring modalities. The secondary end-points determine if the discrepancy impacts treatment plan and cure rates as well as determine if the patient demographics skewed treatment decisions based on which test was utilized and instructions followed according to manufactures suggestions. A variety of statistical analyses will be utilized setting a p-value of 0.05 to define statistical significance. Wilcoxon Signed-Rank Test will determine the intrapatient fibrosis score discrepancy. Categorical parameter differences will be compared using Chi Square Test. Patient

baseline demographics will be compared using descriptive statistics, and lastly logistical regression will be performed to account for any confounding variables that may have led to any statistically significant results.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-169

Poster Title: Lacosamide pharmacokinetics in critically ill patients receiving continuous renal replacement therapy

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Purpose: Lacosamide is a third generation anti-epileptic drug used frequently for the prevention and treatment of seizures in critically ill patients with epileptiform disorders in neurocritical care settings. Lacosamide pharmacokinetics in this patient population have not been described by any previous study. The purpose of this study is to describe the pharmacokinetic parameters and sieving coefficient of the anti-epileptic drug lacosamide in critically ill patients receiving continuous renal replacement therapy. Knowledge of lacosamide pharmacokinetics in the setting of continuous renal replacement therapy may be useful to clinicians considering alternative dosing strategies.

Methods: This is a prospective, open-label, pharmacokinetic analysis. This study will be approved by the institutional review board at the study center prior to initiation. Subjects will be eligible for approach for consent if they meet the following inclusion criteria: subject prescribed lacosamide while admitted to the neurocritical care unit at the study center, subject prescribed continuous renal replacement therapy, subject expected to survive for greater than 24 hours. Subjects will not be eligible for consent if any of the following criteria are met: pregnancy, prisoner, less than 18 years of age, receiving agents that may alter lacosamide plasma concentrations, subject unable to be consented. Patients will be identified by survey of the neurocritical care service census at the study center. Power analysis was not performed. Following consent lacosamide plasma, ultrafiltrate, and urine concentrations will be obtained at the following intervals: pre-dose, post-dose, 1, 2, 4, and 8 hours. The following pharmacokinetic parameters will be mathematically derived using Phoenix WinNonlin 6.0 (Registered

Trademark, Certara 2009): maximum and minimum plasma concentrations, half life, elimination rate constant, area under the plasma concentration time curve (0-24h), clearance, volume, sieving coefficient. Secondary outcomes include description of admitting diagnosis, lacosamide indication, survival, recurrent seizure activity, continuous renal replacement therapy prescription, demographics.

Results: This study is currently being reviewed by the Institutional Review Board at the study center.

Conclusion: This study is currently being reviewed by the Institutional Review Board at the study center.

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 10-170

Poster Title: Educational Needs of Hospice Providers Regarding the Use of Medical Cannabis

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Purpose: Currently, 25 states and the District of Columbia have legalized or decriminalized cannabis (marijuana) for medical use despite remaining as Schedule I at the federal level. The benefits of medical cannabis have been shown in nausea and vomiting associated with cancer chemotherapy, cachexia associated with HIV/AIDS, and certain kinds of neuropathic pain or treatment-resistant cancer pain. However, it is unclear how comfortable hospice providers are with the concept of medical cannabis. The aim of this study is to determine changes in knowledge, skills, attitudes, and perceived knowledge gaps from hospice providers (physicians, pharmacists, nurse practitioners, etc.) regarding medical cannabis.

Methods: Working with a large national hospice and palliative care program that has operations in 19 states, an educational needs assessment survey has been developed to assess providers' knowledge, beliefs, concerns, and training needs regarding medical cannabis. The survey instrument has been field tested, assuring user friendliness and completeness. Participants will be asked to rate their self-perceived skills in the use of medical cannabis, and their opinion about educational content likely to be of interest to hospice providers. Survey results will guide the development of a training module for the providers regarding best clinical practices of medical cannabis. An online learning activity will be developed for asynchronous delivery. Participants will take a pre-course and post-course survey to assess changes in knowledge, skills, and attitudes in predetermined learning domains.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-171

Poster Title: Improving knowledge, skills and attitudes (KSA) of community pharmacists in implementing fall prevention initiatives for older adults

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Purpose: Falls in older adults is a growing public health concern, and they affect a large subset of older adults. Oftentimes, they result in injury, decreased quality of life, and death. Pharmacists can play an important role in preventing falls by screening for Fall Risk Increasing Drugs (FRIDs). The intent of this pilot program is to evaluate the effectiveness of a one-time educational seminar for community pharmacists on FRIDs and fall prevention strategies in two components: 1) improving pharmacists' knowledge, skills, and attitudes (KSA) regarding FRIDs; and 2) increasing long term utilization of falls prevention initiatives in the community pharmacy setting.

Methods: This prospective pilot program focuses on practicing full time and part time community pharmacists in the greater Baltimore area in Maryland. Pharmacist participants will attend one live educational seminar regarding FRIDs and fall prevention tools and strategies that can be implemented in a community pharmacy setting. Continuing education credit will be offered as an incentive for participation in the study. At the beginning of the seminar, pharmacists will be asked to complete a survey that will assess demographics and KSA pertaining to FRIDs and implementing fall prevention initiatives. Pharmacists will then complete a post survey that will measure changes in their KSA. In order to measure sustainability and feasibility, the second phase of the study will ask pharmacists to track the number of falls initiatives they complete, as well as time spent (separated by pharmacist and non-pharmacist time) via a reporting system on a weekly basis over a three-month period. The categories for these initiatives include: 1) Educational Brochures; 2) Falls Risk Screens; 3) Patient/Caregiver

Counseling; 4) Medication Therapy Management: Targeted Medication Review focused on FRIDs; and 5) Medication Therapy Management: Comprehensive Medication Review. This study will be submitted to the University of Maryland Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-172

Poster Title: Evaluation of albumin use in medicine patients

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Purpose: Albumin is a limited resource that can add significant expense to a hospital stay. It has been used for numerous indications, some with more robust evidence than others. While there are many potential uses for albumin, indications for use in adult medicine patients include the following: spontaneous bacterial peritonitis, large volume paracentesis, hepato-renal syndrome, and refractory diuresis. The primary outcome of this study is to characterize the use of albumin for patients admitted to medicine. Based on the results of the review, institutional guidelines may be modified to assist prescribers in ensuring appropriate use in this population.

Methods: This will be a retrospective electronic medical chart review that will be submitted to the institutional review board for approval. All adult patients admitted to general medicine teams who received albumin between January 1, 2016 to June 30, 2016 will be included. Patient demographics will be collected, including patient age, gender, weight, ethnicity, baseline albumin, renal function, and etiology of liver disease. If applicable, total volume removed during paracentesis will be collected. The dose, frequency and duration of albumin use, as well as the total cost and the indication documented on the albumin order will also be collected. Descriptive statistics will be used to analyze the data.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-173

Poster Title: Facilitating home hospice transitions of care in oncology: Evaluation of pharmacist's interventions and patient representation rates

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Purpose: Transitioning patients with terminal illnesses from inpatient settings to home hospice is often challenging due to the complex coordination of care required. Failure to anticipate symptom management needs can contribute to poor care transitions and increase representation rates. Pharmacist intervention may improve transitions of care in this population, yet the importance of medication reconciliation to home hospice transition is understudied. A transitions of care initiative was developed to streamline the transition from inpatient to home hospice, consisting of using a hospice discharge checklist, pharmacist discharge medication reconciliation, review of discharge prescriptions, and facilitation of bedside delivery of discharge medications.

Methods: This study evaluates the impact of the transitions of care initiative by characterizing pharmacist interventions, rate of patient representation, and effect on local hospice organizations' perception of discharge readiness. This is a single center, prospective, pilot study comparing the pre-implementation period from July 1, 2015 through December 31, 2015 to post- implementation period from January 4, 2016 to April 1, 2017. Inclusion criteria include patients aged 18 years and older, an oncologic diagnosis, admission to the medicine service or Cancer Center, who are being transitioned to home hospice. Data identifying drug-related problems and the number and types of pharmacist interventions will be captured by the clinical pharmacist. Documentation in the electronic medical records will be used to retrospectively evaluate representation rates pre- and post-implementation for up to three months after discharge to home hospice. A pre- and post-implementation survey will be used to evaluate hospice organizations' perception of discharge readiness. Descriptive statistics will be used to analyze the number and type of pharmacist interventions, as well as the hospice survey

responses. The Mann-Whitney U test will be used to compare hospital representation rates. Data collection and analysis are currently in progress.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-174

Poster Title: Comparison of bivalirudin versus heparin in patients with acute coronary syndrome where percutaneous coronary intervention is performed at a private community hospital

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Purpose: In the United States, heart disease is the leading cause of death, killing over 370,000 Americans per year. Anticoagulant therapy prevents thrombus formation at the site of arterial injury, on the coronary guidewire, and in catheters used for percutaneous coronary intervention. Conflicting evidence exists between the efficacy and safety of bivalirudin versus heparin in the setting of percutaneous coronary intervention in patients with acute coronary syndrome. The purpose of this retrospective study is to compare the incidence of thrombotic complications and bleeding events in patients who received bivalirudin versus unfractionated heparin during percutaneous coronary intervention for acute coronary syndrome.

Methods: A single center retrospective chart review of patients who underwent percutaneous coronary intervention (PCI) for acute coronary syndrome who received either bivalirudin or unfractionated heparin will be conducted. Adult patients greater than or equal to 18 years of age will be included in this study. Patients excluded from this study are those who experienced cardiac arrest during the procedure, required a mechanical assist device, received target temperature management for pulseless ventricular tachycardia, required coronary bypass graft during the same hospitalization in which PCI was performed, and those who were identified as pregnant at the time of admission. The primary objective is to measure the incidence of thrombotic complications within 30 days of intervention. The secondary objective is to compare the incidence of bleeding events that occurred within 72 hours after PCI in the bivalirudin versus unfractionated heparin groups. The incidence of thrombotic complications will be measured by a chart review of each patient thirty days after PCI. If an admission is available, the

chart will be reviewed to determine if the admission was indicative of thrombotic complications. This study is pending Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Case Report

Session-Board Number: 10-175

Poster Title: Aripiprazole-induced Neuroleptic Malignant Syndrome (NMS): A case report

Primary Author: Rachel Swearingen, Baptist Memorial Hospital - North Mississippi, MS; **Email:** rachel.swearingen@bmhcc.org

Additional Author (s):

Purpose: Neuroleptic Malignant Syndrome (NMS) is a life-threatening neurologic emergency that is characterized by mental status and behavioral changes, muscle rigidity, laboratory abnormalities, fever and dysautonomia. This distinctive clinical syndrome is associated with the use of neuroleptic agents, in particular first generation antipsychotics. This case reports illustrates the development of NMS after reinitiating a patient's home antipsychotic agent. The patient was a 37 year old African American female who was transferred to our facility from an outside hospital for further evaluation of elevated troponin, elevated lactic acid and hypokalemia after prolonged heat exposure on August 24, 2016. She presented with complaints of dizziness, diaphoresis, leg cramping, hand stiffening, and fall. She had a past medical history that included hypertension and bipolar disorder. The patient was admitted to ICU stepdown with a troponin of 3.69 ng/mL and creatinine kinase (CK) of 23750 U/L. She was given Potassium 40mEq, NS (0.9%) 1000mL bolus, Humalog and Pepcid. On the morning of admission day 2, she was found to have a troponin of 4.82 ng/mL and CK of 49508 U/L, and her home medications were restarted, including aripiprazole 10mg po daily. Later this same morning she was diagnosed with rhabdomyolysis and her aripiprazole was discontinued after patient received one dose due to elevated CK. The patient was started on continuous heparin infusion and D5W with Na Bicarb 150mEq infusion. On admission day 3, the patient began complaining of further leg cramping, reported she was hot and dizzy and was found to be hyperthermic, tachycardic with a heart rate in the 150-180's and had a CK>50000 U/L. At this time, she was thought to have NMS and one dose of IV dantrolene 1mg/kg (92.9mg) was ordered. She was also noted to have contractures in her feet and upper extremities. She was given 5 of IV Valium and transferred to the ICU where her NMS resolved. A few hours later, the morning of day 4, the patient had a recurrent episode of fever and rigidity, and her CK remained >50000 U/L. This recurrent episode was again resolved with one IV dantrolene 1mg/kg (92.6mg). The patient was then ordered oral dantrolene 100mg q6h for maintenance. The afternoon of day 4, the patient had a 3rd episode of NMS, was given a 3rd dose of IV dantrolene 1mg/kg (92.6mg), the

dantrolone 100mg q6h po was changed to IV and she was started on bromocriptine 10mg po TID. By day 5, the patient has improved significantly, lab values began improving and the dantrolene maintenance was discontinued and changed to PRN, while the bromocriptine was increased to 20mg TID until patient was discharged on September 6. Upon discharge, the patient was found to need home oxygen as a result of respiratory distress experienced during her episodes of NMS. Patients typically develop NMS hours or days after first exposure to the causative drug, most within the first 30 days. In this case, the patient had chronically used aripiprazole, a second generation antipsychotic, and the development of NMS after one dose in the hospital was thought to be precipitated by her dehydration and prolong heat exposure. This case of NMS was resolved after aggressive fluid and medication management. Given the amount of neuroleptics prescribed by physicians and the complications of NMS, the recognition and appropriate management of this syndrome should be addressed.

Methods:

Results:

Conclusion:

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-176

Poster Title: Comparison of the risk of bleeding in patients receiving triple antithrombotic therapy in a private community hospital

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Additional Author (s):
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Purpose: According to the 2016 ACC/AHA Guideline Focused Update on Duration of Dual Antiplatelet Therapy in Patients with Coronary Artery Disease, clopidogrel is the antiplatelet of choice when triple therapy is warranted. The guidelines note the addition of dual antiplatelet therapy to anticoagulant therapy increases bleeding complications by two to three fold. There is limited data comparing the incidence of bleeding among the multiple combinations of antiplatelets and anticoagulants currently available. The purpose of this study is to retrospectively compare the incidence of bleeding events associated with triple antithrombotic therapy over a three, six and/or twelve month interval.

Methods: This study is a single center, retrospective chart review of patients receiving triple antithrombotic therapy. Computerized medical records will be used to identify patients at the investigation site who are concurrently receiving aspirin plus either clopidogrel, prasugrel, or ticagrelor plus either warfarin, apixaban, rivaroxaban, or dabigatran from January 2015 through September 2016. Patients will then be divided into twelve groups based on the antithrombotic therapy combination. Patients will be included if they were started on triple antithrombotic therapy during the investigation period. Information gathered for each patient will include comorbidities, duration of triple therapy, INR (if on warfarin) and demographic data to determine population variances. Patients will be excluded if they are pregnant or less than 18 years of age. This study is pending Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-177

Poster Title: Improving utilization of prescription assistance programs for eligible uninsured and under-insured patients in a community hospital system

Primary Author: Alice Morgan, Baptist Memorial Hospital North Mississippi, MS; **Email:** akcave1@hotmail.com

Additional Author (s):

Purpose: Pharmaceutical prescription programs are available for eligible patients but are often underutilized in the hospital system Improved utilization of these programs could improve quality care for the patients and in turn improve quality outcomes within the hospital system. A program to revise the current process for obtaining patient's medications as they transition out from inpatient care will be implemented through a partnership with case management and pharmacy. Department training and education will be provided and utilization will be evaluated for success prior to implementing revised process compared to after implementation of revised process for utilizing patient assistance programs.

Methods: Patients will be identified through the EPIC system and a partnership between pharmacy and case management to identify eligible patients who are on medications that are available through patient assistance programs. Pharmacy will contact patients who were offered patient assistance options 30 days prior to implementation of revised approach to determine if after discharge medications were accessed and program benefits utilized. Barriers to access post discharge will also be accessed. These results will be compared to patient's access and barriers after revised program was implemented. The month of October will be used to in-service and educate case management and pharmacy departments on available programs and how to access these programs most effectively. Beginning November 1, 2016, case management will record eligible patients and patient assistance programs offered and pharmacy will follow up with patient post discharge to determine success in obtaining desired medications and any barriers that occurred in the process.

Results: n/a

Conclusion: n/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-178

Poster Title: Evaluation of fluoroquinolone use in the behavioral health center population at St. Dominic's Hospital

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Purpose: The new fluoroquinolone boxed warning highlights the risk of severe side effects that involve the tendons, muscles, joints, nerves, and central nervous system, thus this class of drugs has now been reserved for more severe infections. Based on the warning, fluoroquinolones are no longer recommended for sinusitis, bronchitis, and uncomplicated urinary tract infection, unless no other antimicrobial options are available. Because of the frequent use of fluoroquinolones in low acuity settings, a medication utilization evaluation is warranted. The purpose of this study is to determine indication, side effects, and drug interactions of fluoroquinolone use in a low acuity setting.

Methods: This will be a retrospective chart review of the first 30 consecutive patients who meet inclusion criteria over a 6 month span. Data will be collected from the patient's chart and electronic medical record from St. Dominic Hospital. Patients will be analyzed if they meet inclusion criteria: over 18 years old, admitted into the St. Dominic Hospital in-patient behavioral health center, and fluoroquinolone use for over 48 hours. The data collected includes: age, gender, race, number of days on fluoroquinolones, indication for fluoroquinolone use, medication list, drug allergies, home medication list, co-existing conditions, and any adverse reactions. Upon completion of data collection, patient account numbers and patient identifiers will be removed and will not be retained. The data collected will be stored within a password-protected document on a password protected desktop computer. Data will be analyzed using descriptive statistics to explain fluoroquinolone use in behavioral health center population. Inappropriate use of fluoroquinolones in this patient population would include: use for off label indication, use when other antimicrobial agents are preferred, or use for new black box warning criteria of sinusitis, bronchitis, and uncomplicated urinary tract infection.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-179

Poster Title: Evaluation of discharge diuretic dose in decompensated heart failure

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Purpose: Acute exacerbations of heart failure usually require admission to the hospital, and diuretics are recommended as first-line therapy to manage fluid overload symptoms. It is not clear, however, on how the dose should be transitioned from an inpatient dose to a home dose to be taken after discharge. As of current, we are uncertain of the relationship between admission, inpatient, and discharge doses of diuretics at St. Dominic Hospital. This study will define these relationships and enable us to determine potential targets for improved pharmacotherapy. We will also identify any trends with our diuretic dosing practices and 30-day readmission rates.

Methods: This will be a prospective cohort study that will include patients admitted for heart failure exacerbation to determine their diuretic dose before admission, during admission, and at discharge. Then we will collect data on 30-day readmission rates on the same patients to determine if an association exists between changes in diuretic doses throughout the patient's hospital stay and 30-day readmission rates. The study population will include patients who were admitted for heart failure exacerbation and met the inclusion criteria. Data will be collected from the patients' chart and electronic medical record from St. Dominic Hospital. Data to be collected include patients' home diuretic dose, total daily scheduled dose of diuretic on the last day of admission, and the discharge dose. Other data to be gathered include the prescribing physician, gender, age, and patient's compliance to the diuretic at home. Protected patient identifiers such as names and account numbers will not be retained. The primary outcome will be differences in diuretic doses prescribed at discharge vs. admission and inpatient. The secondary outcome will be 30-day readmission rates in relation to diuretic doses. For statistical analysis, we will use student t-test for continuous data and X2 test for nominal data. We also plan to perform a subgroup analysis only including those patients who were compliant with their diuretics prior to admission.

Results: N?A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-180

Poster Title: Impact of sacubitril/valsartan at lower than target doses on hospitalizations in heart failure with reduced ejection fraction

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Additional Author (s):
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Purpose: Many patients are unable to tolerate the target dose of sacubitril/valsartan achieved in the PARADIGM Trial. More information is needed to determine if heart failure patients benefit from lower doses. The primary objective of this study is to determine if sacubitril/valsartan at doses less than 97/103 milligrams twice daily reduces hospitalizations in heart failure patients with reduced ejection fraction compared to other medications that target the renin–angiotensin–aldosterone system, such as, angiotensin converting enzyme inhibitors or angiotensin II receptor blockers. Secondary objective includes determining the percentage of patients started on the dose recommended by the sacubitril/valsartan Food and Drug Administration labeling.

Methods: This study will be submitted to the University of Mississippi Medical Center Institutional Review Board for approval. A report generated through the electronic health record will identify patients that have been prescribed sacubitril/valsartan between July 1st, 2015 and October 31st, 2016. Patients that have been seen in a UMMC Outpatient Heart Failure Clinic at least once in the 6-months prior or 6-months after sacubitril/valsartan initiation will be included. The following data will be collected: patient age, gender, ethnicity, ACC/AHA Heart Failure Stage, NYHA Functional Class, dose of ACEi or ARB prior to sacubitril/valsartan initiation, blood pressure, serum creatinine/eGFR, maximum tolerated dose of sacubitril/valsartan, number of hospitalizations for the 6 months pre- and post-sacubitril/valsartan initiation, and concomitant medications for the treatment of heart failure.

Hospitalizations rates for the 6 months prior to sacubitril/valsartan initiation will be compared to hospitalization rates for the 6 months post sacubitril/valsartan initiation using a McNemar's test. Initial sacubitril/valsartan dose will be categorized as appropriate or not appropriate based on current FDA-approved labeling. Descriptive data will be used to elucidate the existence of trends.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-181

Poster Title: Comparison of patient outcomes for patients with diabetes enrolled in different medication adherence programs

Primary Author: Lena McDowell, University of Mississippi School of Pharmacy, MS; **Email:** ldmcdowe@olemiss.edu

Additional Author (s):
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Purpose: In Mississippi, one in eight adults report a diagnosis of diabetes. Medication nonadherence contributes to diabetes progression and complications. The objective of this study is to determine if Parata Patient Adherence Strip System (PASS) packaging improves clinical outcomes in patients with diabetes when compared to a traditional medication vial adherence program.

Methods: This study will be submitted to the University of Mississippi Institutional Review Board for approval. Patients of Tyson Drug Company (TDC) who are currently taking at least one medication for diabetes will be invited to participate. Baseline assessments will include hemoglobin A1c (HbA1c), lipid panel, systolic/diastolic blood pressure, waist circumference, and body mass index. Subjects with a HbA1c value above seven percent will continue with the intervention. Subjects will be randomized into one of two intervention groups: TDC model or Right Way Meds (RWM) model. In the TDC model, subjects will receive their medications in medication vials on the same date each month; whereas, subjects in the RWM model will receive their medications in customized Parata PASS packaging every twenty-eight days. In both models, pharmacy technicians will make monthly reminder telephone calls, verifying medications, arranging pickup/delivery, and inquiring about provider visits. The primary outcome will be the change in HbA1c from baseline. The secondary outcomes will include percentage of patients achieving HbA1c goal of less than seven percent, change in blood pressure, medication adherence, patient satisfaction in pharmacy care, and quality of life assessment.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-182

Poster Title: Comparison of depression screening methods for patients with diabetes in a community pharmacy setting

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Purpose: Major depressive disorder affects approximately 31% of patients with diabetes. It has been suggested that for a large proportion of people, the diagnosis of depression is unrecognized. The community pharmacist is in a unique position to assist in screening for depression due to their accessibility to the community. The primary objective is to implement and evaluate pharmacist-administered depression screenings for patients with diabetes through 3 different methods within the community pharmacy to determine most effective approach. The secondary objectives are to determine if referral results in initiation of treatment and assess the barriers associated with declined depression screenings.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients filling at least one diabetic medication the last 3 months at 2 Walgreens locations will be invited to participate. Patients will be offered a depression screening (PHQ-9) to be provided in one of the following settings: medication therapy management (MTM) encounter, informational session, or pharmacist consultation. Patients meeting inclusion criteria who are scheduled for MTM visits will be offered the screening after the MTM encounter. The second method includes informational sessions advertised with flyers placed on prescription bags of patients meeting inclusion criteria. During each of four sessions depression and diabetes will be discussed. All attendees will be offered a depression screening. The final method is a pharmacist consultation at prescription pick-up. During prescription verification, a consult requirement will be placed on the prescriptions of patients meeting inclusion criteria. During the pharmacist consultation the screening will be offered. Informed consent will be signed.

Study activities will be conducted in a private consultation room. For the screening, the PHQ-9 will be administered and demographic and primary care provider information will be collected. Patients will be called 3 months following the screening to determine referral results. The primary outcome is percentage of patients screened by each method. Those declining the screening will be invited to complete a brief survey regarding reasons for declining.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-183

Poster Title: Renal and blood pressure outcomes with sodium glucose co-transporter 2 inhibitor initiation and concurrent diuretic dose reduction: a retrospective cohort analysis

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Purpose: The CDC predicts that 1 in 3 adults in the U.S. will have diabetes by the year 2050. Many patients with diabetes have other cardiometabolic comorbidities, including hypertension. As such, many are already treated with a diuretic prior to initiating an SGLT2 inhibitor. As both of these classes exert their effects renally, many empirically reduce the dose of pre-existing diuretics when initiating an SGLT2 to circumvent potential adverse events. Little data exists confirming the actual benefits of this practice. This project was designed to compare outcomes between cohorts initiating SGLT2s with and without concurrent dose reduction for pre-existing diuretic regimens.

Methods: Electronic patient charts from the Diabetes Care Group clinic in Flowood, MS, as well as family medicine and internal medicine clinics at the University of Mississippi Medical Center will be reviewed in a retrospective fashion for all patients identified as having initiated SGLT2 therapy between March 2013 and September 2016. Information collected will include all of the following for eligible patients at baseline and follow-up: hemoglobin A1C (HgbA1C); serum sodium, potassium, creatinine, blood urea nitrogen, glucose; eGFR; and blood pressure. For the purposes of this study, “baseline” is defined as most recent values within 6 months of SGLT2 initiation; “follow-up” is defined as all values collected within 6 months following SGLT2 initiation. Outcome measures for this study will include mean reductions in HgbA1C and blood pressure in the intervention and control groups, as well as a hazard ratio comparing incidence of AKI between intervention and control groups. A t-test will also be performed to analyze baseline and follow-up laboratory values between intervention and control groups.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-184

Poster Title: Patient vs pharmacist perceptions on key educational points in diabetes counseling in the community pharmacy setting.

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Purpose: This study aims to compare the pharmacists' and patients' perceptions on key educational points in diabetes counseling in the community pharmacy setting; and to determine pharmacists' confidence in key areas of diabetic counseling versus patients' confidence in key areas of diabetes self-care. The American Diabetes Association discusses strategies for improving diabetes care and lists key objectives to help healthcare professionals support diabetic patients. Determining whether pharmacists and patients are synchronized on important areas of diabetes counseling and areas of confidence in diabetes care may help the pharmacist focus on what the patient perceives is most valuable when counseling diabetic patients.

Methods: This research is a prospective observational study. It will be implemented at 10 sites of a large chain community pharmacy in the Mississippi. All community pharmacists and patients at participating locations will be asked to complete a 5-point Likert scale survey which will consist of 27 questions each. Participation in the research will be voluntary and anonymous. Participating patients will receive 1000 balance rewards points for completing the survey. Potential participants will be identified during the dispensing process by pharmacists and technicians. A list of diabetic medications will be reviewed with staff members and posted at the filling station to assist in identifying patients. The pharmacists and technicians will flag prescriptions for diabetic medications with a bull's eye to alert staff members at the prescription pick-up window. At the pick-up window, staff members will be trained to distribute the survey to eligible patients and ask them to participate in the study. Patients 18 years and older with type 2 diabetes will be included. Completed surveys will be returned to a secure area of the pharmacy until collection by the principal investigator. Patients with type 1 diabetes,

pregnant women, those who are unable to speak English, cognitively impaired or unable to make decisions, and who are blind or deaf will be excluded. The data will be analyzed using descriptive statistics.

Results: Not Applicable

Conclusion: Not Applicable

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-185

Poster Title: Implementation of pharmacist-led Medicare annual wellness visits in two hospital-based clinics

Primary Author: Caleb Little, Carolinas Healthcare System, NC; **Email:** caleb.little@carolinashealthcare.org

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Purpose: The Affordable Care Act implemented preventive services for Medicare beneficiaries in the form of annual wellness visits (AWV) in 2010. Although there is no patient copay, utilization of AWVs remains low nationwide partially due to the lack of time physicians have to discuss preventive health with patients as opposed to acute issues. However, such visits may be conducted by licensed healthcare professionals, including pharmacists, under the direct supervision of a physician. The objectives of this study are to determine the feasibility of implementing AWVs conducted by pharmacists in two hospital-based clinics as well as explore the outcomes of the visits.

Methods: Screening for participation in the pharmacist-led AWVs will be prospectively conducted via the electronic medical record (EMR). Patients that meet the inclusion criteria (≥ 66 years of age with Medicare coverage, a current patient of either clinic, and have not received an Initial Preventative Physical Examination or AWV within the past 12 months) will be contacted by the pharmacist to determine interest in completing an AWV. A letter will be sent to interested patients providing an overview of the visit and forms the patient should complete prior to their appointment. During the AWV, the following will be determined per Medicare requirements: weight, height, blood pressure, functional status, presence of cognitive impairment, signs of depression, complete medication list, past medical history, social history, list of medical providers, and any other medical information or test deemed necessary based on past medical history or family history. Upon completion of the AWV, the pharmacist will complete medication therapy management (MTM), develop and discuss a personal health maintenance and prevention plan and provide referrals for completion of preventive measures or for follow-up with a provider given uncontrolled/untreated disease states. A patient

satisfaction survey will be provided as well. Completion of preventive screenings and referrals will be assessed 3 months after the visit.

Results: n/a

Conclusion: n/a

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-186

Poster Title: Filgrastim in the inpatient care setting: a medication use evaluation

Primary Author: Morgan Humphrey, Carolinas HealthCare System - NorthEast, NC; **Email:** morgan.humphrey@carolinashealthcare.org

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Purpose: Myeloid growth factors such as filgrastim, pegfilgrastim, and sargramostim stimulate proliferation, differentiation, and activity of cells in the myeloid lineage. By shortening the neutropenic interval, patients are less likely to become febrile and acquire infection. Another use includes mobilizing stem cells prior to hematopoietic stem cell transplantation. This medication use evaluation will assess the current prescribing patterns, dispensing, administration, and monitoring of filgrastim in the inpatient care setting at Carolinas Medical Center (CMC) and Carolinas HealthCare System – NorthEast (CHS-NE). Potential cost savings will be evaluated if tbo-filgrastim or filgrastim-sndz were used in place of the reference product, filgrastim.

Methods: This Institutional Review Board-approved, retrospective chart review will include patients who received at least one dose of filgrastim at CMC or CHS-NE during the evaluation period of January 1, 2016 to March 31, 2016. Pediatric patients will be excluded. Documented bone pain will be recorded for adverse event monitoring. Prescribing will be evaluated according to FDA indication, weight-based dose rounding, filgrastim administration timed at least 24 hours post-chemotherapy, and discontinuation in hematopoietic stem cell transplant patients according to standard operating procedures. Data will be collected from the electronic medical record according to proposed criteria and protected within the Research Electronic Data Capture (REDCap) management system. The collected data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-187

Poster Title: Evaluation of a pharmacist-led asthma and chronic obstructive pulmonary disease (COPD) management service in a collaborative primary care setting: a prospective cohort study

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Purpose: Asthma and COPD are two of the most common lung diseases in the United States. Asthma attacks and COPD exacerbations are frequent among these patients and lead to increased healthcare utilization, costs, and mortality. Pharmacists are in a unique position to fill the need for targeted care for these patients with their education, training, and presence in outpatient clinics. The objective of this study is to evaluate the impact of pharmacist intervention on asthma and COPD outcomes in the primary care setting through disease education, guideline-directed optimization of medication regimens, and counseling on inhaler use technique and tobacco cessation.

Methods: Patients who are at least 18 years of age, receive primary care at Ardsley Internal Medicine – Concord, and have uncontrolled, symptomatic asthma and/or COPD will be eligible for selection. Eligible patients will be identified through a population health management database for the practice or will be directly referred by practice healthcare providers. The selected patients will be contacted by phone for enrollment into the study. An initial 60-minute clinic visit with the pharmacist will be scheduled for the patient. During initial visits, patients will fill out questionnaires standard to patients with respiratory conditions. The following data will be collected: age, gender, race, tobacco use, health-related quality of life, medication adherence, unplanned healthcare utilization, vaccination status, and disease/symptomatic control. Patients will then receive spirometry testing performed by the pharmacist and interpreted by the overseeing physician. The pharmacist will provide disease state education, optimize medication therapy through recommendations to providers, counsel on medication and inhaler use technique, and schedule follow-up visits. There will be an interim, optional, 60-

minute group smoking cessation class, as well as a 60-minute follow-up visit to perform repeat spirometry, complete the same questionnaires and a patient satisfaction survey, and assess medication and inhaler use technique. All data will be recorded without patient identifiers and maintained confidentially. Post-pharmacist intervention data will be compared to initial, baseline data to determine changes in pre-specified outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-188

Poster Title: Pharmacist involvement in an interdisciplinary care team providing personalized healthcare within the Proactive Health model

Primary Author: Stephanie Barquero, Carolinas Healthcare System NorthEast, NC; **Email:** stephanie.barquero@carolinashealthcare.org

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Purpose: Concierge medicine is a growing area of healthcare in which pharmacy services have not yet been implemented. The purpose of this project is to evaluate the impact of a pharmacist as part of a concierge healthcare model by defining potential existing pharmacy related problems and identifying the most needed pharmacist services that will enhance personalized patient care.

Methods: This study has been approved by the Institutional Review Board. The project will enroll and see patients in person and using virtual technology during a six-month period from October 2016 to April 2017. Either the patient or another health care team member can request pharmacy services, at which point the patient would be enrolled. After enrollment and before the patient's clinic visit is performed, the requested pharmacist services will be recorded and the patient's electronic medical record will be reviewed for areas needing pharmacist intervention. These areas to be identified on the patient's medical record would include: number of medications and existing duplications, drug-drug/drug-supplement/drug-food interactions, and needed medication titrations based on most recent labs. The patient will then have a clinic visit to address these issues and be asked to give feedback on pharmacist participation in their care via survey. After the initial visit, the patient can have subsequent visits for follow up on interventions made. They can also interact with the pharmacist (and other team members) via cell phone app for more personalized/on demand care. Patient non-specific requests from other members of the care team (for example drug information questions and drug cost evaluation) will be recorded with the corresponding pharmacist action performed.

Results: In process

Conclusion: n/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-189

Poster Title: Medication use evaluation of sodium polystyrene sulfonate in the hospital setting

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Purpose: Sodium polystyrene sulfonate (SPS) has been associated with multiple reports of bowel necrosis, and its efficacy has come into question with the emergence of two novel potassium-binding resins for the treatment of hyperkalemia. This study seeks to assess the prescribing patterns, monitoring, efficacy, and incidence of adverse events related to the administration of SPS in the acute care setting.

Methods: This is a retrospective chart review of patients admitted to Carolinas HealthCare System NorthEast and administered SPS during their stay. This study was deemed quality improvement by the health system's Institutional Review Board. The electronic medical record was used to identify patients that received at least one dose of SPS between January 1, 2016 and July 31, 2016. A random sample of 100 patients was chosen for the study. The following data will be collected: patient age, gender, actual body weight, length of stay, comorbidities, prescribing physician, dose and route of SPS, and baseline serum creatinine and potassium level. The medication administration record will be reviewed to identify concomitant medications used for the treatment of hyperkalemia and medications that have the potential to interact with SPS. Lab values and physician progress notes will be used to note any adverse events or electrolyte abnormalities resulting from the administration of SPS. The primary endpoint is to determine the mean change in serum potassium. Secondary endpoints include the percentage of patients remaining hyperkalemic or experiencing hypokalemia following the administration of SPS, the incidence of adverse events related to SPS administration, and the percentage of patients receiving repeat doses of SPS.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-190

Poster Title: Effectiveness of a Pharmacist-Managed Hypertension Clinic with Incorporation of 24-Hour Blood Pressure Monitoring in Patients with Uncontrolled Hypertension: A 6 Month Prospective, Randomized, Controlled Trial

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Additional Author (s):
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Purpose: Although patients with hypertension are at increased risk for multiple comorbidities such as heart disease, stroke, heart failure, and chronic kidney disease, roughly half of patients with hypertension remain uncontrolled. Additionally, ambulatory blood pressure monitors are currently underutilized in practice to identify patients with nocturnal or resistant hypertension. The objective of this study is to evaluate the effectiveness of a pharmacist-led hypertension clinic with incorporation of continuous blood pressure monitors on blood pressure control rates at 3 months in patients with uncontrolled or resistant hypertension.

Methods: This study has been submitted and approved by the Institutional Review Board. The study will be conducted at two internal medicine clinics within Carolinas HealthCare System NorthEast. Study participants will be randomly selected from the Tableau patient population report, as well as through physician referrals. Additionally, a control group will be randomly selected from the Tableau patient population report. Patients in the intervention group will be contacted to schedule an initial pharmacist-led hypertension clinic appointment for a comprehensive medication review, evaluation of adherence and lifestyle, and application of a continuous blood pressure monitor. Using results from the continuous blood pressure monitor, as well as data collected from clinic visits, the pharmacist will make appropriate adjustments to the medication regimen under a collaborative physician-pharmacist practice agreement and protocol. The pharmacist will schedule additional follow-up appointments with each patient to reassess hypertension control, adherence, and lifestyle modifications. All data will be recorded

without patient identifiers and maintained confidentially. In-clinic blood pressure measurements, medication interventions, BMI, and number of antihypertensive medications will be assessed at 3 months and at study end.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-191

Poster Title: Medication use evaluation of midazolam infusions in the intensive care unit at Carolinas Healthcare System NorthEast (CHS NE)

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Purpose: The American College of Critical Care Medicine has established guidelines recognizing that the use of benzodiazepines for sedation in the intensive care unit (ICU) may contribute to an increased length of stay, increased time on the ventilator, and delirium. The objective of this study is to determine if the management of sedation at CHS NE complies with current best practice recommendations.

Methods: This IRB approved retrospective chart review will identify patients who received a midazolam continuous infusion between 01/01/16 and 06/30/16 through a medication administration report. Patients will be included if they are admitted to the CHS NE ICU and received a midazolam infusion while in the ICU. Patients will be excluded if the patient is less than 18 years old, the midazolam infusion was used for the treatment of status epilepticus, if the patient was pregnant, or if the patient was receiving comfort care. Baseline demographics will be collected including age, sex, weight, renal function, and documented liver impairment. Other characteristics related to medication administration will be assessed: ICU length of stay, target/actual RASS scores, use of alternative agents, midazolam dosing, prescribing physician, adverse effects, the strategy used for discontinuation of midazolam. Appropriateness of prescribing will be evaluated to determine the need for revision of current practice to reduce the risk of adverse events associated with benzodiazepine sedation.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-192

Poster Title: Assessing the impact of medication therapy management and pharmacist collaboration with home health allied health professionals on hospital readmission rate, falls, and emergency room visits

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Purpose: The purpose of this pilot program at Carolinas HealthCare System Northeast (CHS-NE) is to determine the value of medication therapy management (MTM) offered by a pharmacist during discharge for patients who are being newly enrolled in Carolinas HealthCare System Healthy@Home (CHS HH), a home health agency.

Methods: This Institutional Review Board exempt quality improvement study will measure readmission rates, emergency room visits, and falls for 30 days following discharge from CHS-NE and admission to CHS HH. Patients experiencing the current standard of care during October and November 2016 will serve as the baseline group. The intervention group will include patients enrolled in CHS HH during the months of December 2016 through February 2017. This group will receive modified MTM services from a pharmacist at discharge and as needed phone collaboration with a CHS HH allied health professional. The modified MTM service will include a comprehensive medication regimen evaluation. Recommendations will be discussed with the provider. At discharge, the medication list will be reviewed by the pharmacist to ensure accuracy and counseling will be provided on this new plan. Inclusion criteria includes age greater than 17 and new enrollment with CHS HH services. Patients with less than five medications and those whose primary language is not English will be excluded. Additionally, patients discharged without the full pharmacist intervention will be excluded from intervention group. Data collected will include demographic variables, number and type of medication

related problems identified, and time to resolve mediation related problems. Pre-defined categories will be used to classify medication problems.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-193

Poster Title: Medication use evaluation: Adjunct aripiprazole use in major depressive disorder

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Purpose: Aripiprazole is an appropriate adjunct medication for the treatment of major depressive disorder (MDD), but there are other medications that cost less, require less monitoring, and have equivalent outcomes. The purpose of this medication use evaluation (MUE) is to assess how many antidepressants were used and maximized prior to the addition of aripiprazole when treating MDD. The results of this evaluation may provide opportunities for medication optimization and determine where a pharmacist can provide education to physicians who are treating patients with major depressive disorder.

Methods: This study is a retrospective review of aripiprazole that was institutional review board exempt. The prescription filling system and the electronic medical record (EMR) will be utilized. Patients who have filled aripiprazole in conjugation with other antidepressants between January 1, 2016 and July 31, 2016 will be evaluated for the following inclusion criteria: at least 18 years of age, being treated for MDD, the prescribing provider is within the Carolinas HealthCare System, and started aripiprazole therapy within the past year of the fill history. Patients with a concurrent mental health diagnosis that would meet a label indication for aripiprazole use outside of MDD will be excluded. After meeting this criteria, a maximum of 100 patients will be reviewed one year prior to filling the medication. The following information will be collected from physician notes and maintained using REDCap: diagnosis of MDD, prescribing provider groups, past MDD treatment (including medications, dosing, and duration of each medication trial), monitoring for adverse drug reactions, and the cost of aripiprazole to both the health plan and the patient. The information will be analyzed through descriptive statistics using percentages, means, medians, modes, and ranges.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-194

Poster Title: Medication use evaluation: Digoxin in pediatrics

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Purpose: Routine therapeutic drug monitoring in pediatric patients who are treated with digoxin is not recommended due to a lack of correlation between digoxin levels and clinical efficacy or toxicity in this patient population. Furthermore, the dosing strategy of digoxin is complex and dependent upon indication, age, and route of administration. Without an available prescribing order set, the potential for medication errors exists. The purpose of this medication use evaluation is to assess the current prescribing, monitoring, and outcomes associated with digoxin use in pediatric patients at a children's hospital.

Methods: This study was submitted to the Institutional Review Board for approval and was deemed exempt. It will include pediatric patients at Levine Children's Hospital from January 1, 2016 to June 30, 2016 who were treated with digoxin. The anticipated sample size will be approximately 30 patient encounters. Patients will be identified via a report of digoxin use provided by pharmacy services. Data will be collected retrospectively via electronic medical record and protected using REDCap data management. Prescribing data, dosing information, product information, laboratory and monitoring data, adverse effects, and outcomes will be collected. Descriptive statistics including means, medians, ranges, and percentages will be used to analyze data.

Results: NA

Conclusion: NA

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-195

Poster Title: Use of high-dose thromboprophylaxis in obese patients

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Purpose: The purpose of this medication use evaluation is to evaluate prescribing, monitoring and outcomes of enoxaparin and unfractionated heparin (UFH) when used for venous thromboembolism (VTE) prophylaxis in obese patients hospitalized at a single academic medical center.

Methods: This medication use evaluation will be a retrospective evaluation of all adult patients on VTE prophylaxis with a body mass index (BMI) greater than or equal to 40 kg/m2. Pregnant patients will be excluded. Additionally, patients with an estimated creatinine clearance less than 30 ml/min in the enoxaparin group will be excluded. An estimated 100 patients will be included.
Variables that will be evaluated include the VTE prophylaxis dosing strategy used, as well as the proportion of obese patients on the recommended VTE prophylaxis dosing for enoxaparin per the institution's recommended order set. Additionally, VTE during admission, bleeding events and anti-Xa levels (if monitored) will be evaluated. REDCap will be used for data collection and protection of all patient information. Data collected during this evaluation will be analyzed using descriptive statistics (mean, median, mode) and will be represented as percentages.
The primary objective is to determine which dosing strategies for enoxaparin and UFH are being used for VTE prophylaxis in obese patients at an academic medical center. Secondary objectives include incidence of new VTE during admission and bleeding while on therapy. Other secondary objectives include anti-Xa levels, if collected, and dose adjustments performed in response to anti-Xa levels.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-196

Poster Title: Evaluation of the extended spectrum triazoles (voriconazole, posaconazole, and isavuconazole) at a large, tertiary care center

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Purpose: Invasive fungal infections (IFI) cause significant morbidity and mortality in immunocompromised patients. The extended spectrum triazoles, voriconazole, posaconazole, and isavuconazole, have different roles in the prevention and treatment of IFI. All three agents are on formulary at Carolinas Medical Center; however, prescribing restrictions have been placed on posaconazole and isavuconazole. The purpose of this project is to assess the prescribing patterns and compliance with restriction policies of the extended spectrum triazoles.

Methods: This is a single center retrospective chart review of all adult patients admitted to Carolinas Medical Center between July 1, 2015 to June 30, 2016, who received at least one dose of an extended spectrum triazole. In the event of multiple admissions during the study period, only the first admission will be included provided that the same extended spectrum triazole was used during each admission; if a change of extended spectrum triazole occurred during the study period, the patient may be included more than once. The electronic medical record will be used to gather data including age, gender, comorbidities, indication for use, dispensing formulation, provider and corresponding provider group, inpatient restriction criteria compliance, duration of extended spectrum triazole therapy, change in antifungal agent and reasons for change, use of combination antifungal therapy, therapeutic drug monitoring, and continuation of triazole in the outpatient setting.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-197

Poster Title: Medication use evaluation of erythropoiesis stimulating agents at a tertiary care institution

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Purpose: Epoetin alfa and darbepoetin alfa are erythropoiesis stimulating agents (ESAs) that stimulate the division and differentiation of committed erythroid progenitor cells, ultimately inducing the release of reticulocytes from the bone marrow into the bloodstream. Among the Federal Drug Administration (FDA) approved indications, treatment of anemia due to chronic kidney disease (CKD) and chemotherapy are the most common. The objective of this study is to evaluate the utilization of ESAs at select Carolinas HealthCare System (CHS) facilities, which will include the evaluation of prescribing, dispensing, monitoring, and outcomes of ESA use in CHS, and assess compliance with FDA requirements.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a retrospective chart review of adult patients who received at least one dose of epoetin alfa or darbepoetin alfa either in the inpatient or outpatient setting during the month of January 2016 at selects CHS facilities. Patients will be identified using the individual charge codes for each ESA on the hospital's formulary. Data will be deidentified, collected in a password protected database, and analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-198

Poster Title: Medication use evaluation: Cefepime and neurotoxicity

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Purpose: Cefepime can induce neurotoxicity, which can manifest as encephalopathy, aphasia, myoclonus, seizures, and nonconvulsive status epilepticus. The Food and Drug Administration reviewed case reports and case series which showed that patients who most commonly developed neurotoxicity with cefepime were 50 years of age or older, had underlying renal dysfunction, often did not receive appropriate dosage adjustments based on renal function, or had prior neurological disease. The primary objective is to determine the incidence of neurotoxicity with the use of cefepime and describe patient characteristics in patients with neurotoxicity.

Methods: This is a retrospective study conducted at Carolinas Medical Center (CMC) that was deemed exempt by the Investigational Review Board. A preliminary search of the pharmacy database for patients who had cefepime profiled on their medication list during hospitalization at CMC between December 1, 2015 and May 31, 2016 will be performed. A random sample of 200 patients will be included. Patients who are greater than 18 years of age and have received extended-infusion cefepime for at least 72 hours will be assessed. Patients with a documented uncontrolled neurologic disorder at baseline will be excluded. Electronic medical records will be used to collect data, including baseline characteristics, cefepime initial dose and duration, renal function, symptoms of neurotoxicity, and concomitant medications that can also cause neurologic symptoms. Symptoms of neurotoxicity will be identified through physician documentation in daily progress notes, documented Glasgow Coma Scale (GCS), and electroencephalogram (EEG) findings. The Naranjo score will be calculated in patients noted to have evidence of neurotoxicity from cefepime to identify likelihood of causality. All data collected will be protected using the REDCap data management system. Data will be analyzed using descriptive statistics with means, medians, ranges, and percentages.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-199

Poster Title: Pharmacist intervention on antibiotic de-escalation in pneumonia at CaroMont Regional Medical Center

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Purpose: The cost of pneumonia care at CaroMont Regional Medical Center is higher than the national average. This has prompted closer prospective antibiotic review to improve patient outcomes by decreasing total days of antibiotic therapy, reduce length of stay and reduce total cost of care. The purpose of this study is to evaluate the impact of pharmacist recommendations for antibiotic de-escalation in pneumonia patients.

Methods: Pending Institutional Review Board approval, this study will be conducted as a prospective cohort study, using a retrospective control group. The following pertinent data will be collected: diagnosis (type of pneumonia), age, gender, renal function, comorbidities, day of therapy that pharmacist intervention occurred, total number of days of antibiotic therapy and length of stay. The information for the retrospective control group will be obtained from patient visits during the months of November 1, 2015-January 31, 2016. For the prospective portion of the study, antibiotic regimens will be evaluated in real-time, using Electronic Health Record software, during the months of November 1, 2016-January 31, 2017. The principal investigator will evaluate the patient based on culture data at 48 hours and clinical signs of infection (white blood cell count, measures of oxygenation, core temperature, initial and follow up chest X-ray), and determine if de-escalation is appropriate. If the patient is clinically stable to no longer require broad spectrum IV antibiotics, the provider will be contacted by telephone to propose de-escalation. If recommendations are accepted, this information will be documented as such. Data will be obtained without any patient identifiers and patient confidentiality will be maintained.

Results: Not applicable

Conclusion: Not applicable

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-200

Poster Title: Dyspeptic pain relief in an acute care setting when comparing liquid antacid therapy with or without the use of local anesthetic agent

Primary Author: Pinky Mahbubani, CaroMont Regional Medical Center, NC; **Email:** pmahbuba@gmail.com

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Purpose: While the use of liquid antacid combined with viscous lidocaine (GI Cocktail) is widespread, there has been limited research showing that the use of additional agents provides significant pain relief in patients with dyspepsia. The purpose of this study is to determine if liquid antacid (aluminum hydroxide, magnesium hydroxide, and simethicone) alone is as effective as using GI Cocktail when treating dyspepsia related pain symptoms the emergency department.

Methods: This study will be conducted as a retrospective chart review study comparing the effects of liquid antacid versus the use of liquid antacid with viscous lidocaine for acute treatment of dyspepsia related pain. Eligible patients will be identified when providers order either liquid antacid or GI Cocktail while in the emergency department. Patients enrolled in this study include those greater than or equal to 18 years old with complaints of dyspeptic symptoms. Patients must have documented baseline pain score prior to receiving the medication and up to three hours after, per standard of care. The following data will be collected: age, gender, date and location of admission, chief complaint, time the medication was administered, pain score at time zero (0) then up to three hours after receiving the medication, rescue agents used, concurrent medications administered during the time frame of assessing pain relief, and documented adverse reactions. Data will also be collected assessing the expenses of compounding GI Cocktail. Data for both groups will be collected in patients who presented to the emergency department prior to July 31, 2016. Patient data will be collected up until the time power is met. Based off of previous studies, adequate pain relief will be defined as a change in pain score greater than or equal to three points from patient's baseline.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-201

Poster Title: Impact of pharmacist-driven intensive care unit (ICU) delirium screening and management on adult patient outcomes

Primary Author: Emily Weisz, CaroMont Regional Medical Center, NC; **Email:** emily.weisz@caromonthealth.org

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Purpose: ICU-acquired delirium has been associated with poor clinical outcomes, including increased mortality, prolonged hospital and ICU length of stay and extended duration of mechanical ventilation. The Pain, Agitation and Delirium Guidelines advocate the use of validated screening tools to identify patients who develop delirium. The purpose of this study is to implement prospective, pharmacist-driven interventions using a validated screening tool to reduce the incidence, severity and complications of ICU-acquired delirium.

Methods: This study will be completed with Institutional Review Board approval and will be conducted as a pre- and post-interventional study with a retrospective control. Pharmacist interventions will include education of ICU nurses, assimilation of the Confusion Assessment Method for the ICU (CAM-ICU) into routine patient assessments, and prospective therapy recommendations to ICU nurses and physicians. Education will ensure baseline understanding of delirium, and provide an introduction to delirium screening using the CAM-ICU. Once education is initiated, delirium screenings with the CAM-ICU will be conducted daily by ICU nurses with the assistance of the primary investigator. The results of the screening will then be used to guide pharmacological and non-pharmacological recommendations as appropriate. Pharmacological interventions will concern the appropriate selection and administration of sedatives, analgesics and antipsychotics in addition to the timely re-initiation of home medications. Non-pharmacological recommendations will include strategies to improve patient orientation. The primary outcome of this study will be to assess the impact of pharmacist interventions on delirium management and patient outcomes, and will be determined by comparing average ICU length of stay prior to and after intervention. The secondary outcomes will be: average number of ventilator days, number of interventions attempted and

implemented, and type of interventions made. Pertinent patient data will include such parameters as demographics, home medications, CAM-ICU findings and ICU length of stay.

Results: Not applicable

Conclusion: Not applicable

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-202

Poster Title: Implementation of a pharmacist driven discharge medication reconciliation on the medical unit of a small community hospital

Primary Author: Lindsey Arthur, Carteret General Hospital, NC; **Email:** lcarthur@ccgh.org

Additional Author (s):
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Purpose: The Joint Commission recommends a process for reconciling medications at all interfaces of care, including admission, transfer, and discharge with involvement from patients, responsible physicians, nurses, and pharmacists. Medication reconciliation has been recognized as a National Patient Safety Goal, due to the increase in readmission rates and adverse events medication discrepancies can cause. The purpose of this study is to identify whether a multidisciplinary approach with a pharmacist performing discharge medication reconciliations will reduce discharge-related medication errors in a small community hospital using an electronic health record.

Methods: This study is a retrospective chart review evaluating pre-specified endpoints before and after the implementation of pharmacists driven discharge medication reconciliation on the medical unit of a small community hospital. A list of patients to be potentially discharged will be provided by the case managers and responsible physicians during daily rounds. The patient population will include those that are discharged from the medical unit during clinical pharmacist hours of seven-thirty in the morning to four o'clock in the afternoon. The designated clinical pharmacist will screen each patient's discharge medication list to ensure proper drug indications, proper dose adjustments if needed, avoidance of duplicate therapy, and drug interactions. The primary endpoint is medication error rates prior to pharmacist review of discharge medication reconciliations compared with pharmacist review of discharge medication reconciliations. The chart review will be conducted utilizing Sentri7 software to analyze patients admitted from December 2015 through January 2016 compared to data from December 2016 through January 2017. Secondary endpoints include percent of medication

errors corrected before discharge, time to perform discharge medication reconciliation, 30 day readmission rates, hospitalist satisfaction with service via electronic survey, and pharmacist satisfaction with service via electronic survey.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-203

Poster Title: Implementation and impact of a pharmacist-driven electrolyte replacement policy in a small, community hospital

Primary Author: Heather Powell, Carteret Health Care, NC; **Email:** hrpowell@ccgh.org

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Purpose: Electrolyte disturbances are common in hospitalized patients, and replacement can consume significant nursing, pharmacy and physician time. The practice of electrolyte replacement can be variable and low electrolyte levels can increase patients' risk of numerous severe outcomes. Currently at Carteret Health Care (CHC), the replacement of potassium, magnesium, calcium and phosphorus are not standardized and rely heavily on provider intervention. The purpose of this study is to evaluate the impact of a pharmacy-driven electrolyte replacement policy developed to more effectively address electrolyte depletion throughout the hospital.

Methods: This study is a retrospective chart review comparing the effectiveness of electrolyte replacement at Carteret Health Care before and after implementation of a pharmacist-driven electrolyte replacement policy. The study population will be identified by chart review using the electronic medical records in addition to our web-based pharmacist clinical support tool, Sentri7 software, to analyze patients admitted from December 2015 through February 2016, comparing data from December 2016 through February 2017. Major outcomes include the time between availability of results and the ordering of replacement, post-replacement levels, number of critical low levels per day, replacement doses, replacement route, arrhythmias, overall satisfaction of policy implementation, and length of stay. Inpatients greater than the age of 18, with a serum creatinine less than 2 mg/dL, a BUN less than 30 mg/dL and a urinary output greater than 30 mL/hr will be included in this study. Patients will be excluded from this study if they are receiving total parenteral nutrition, chronically malnourished, experience a rise in serum creatinine >0.5 mg/dL over a 48-hour period, or qualify for inclusion in the diabetic

ketoacidosis/ hyperosmolar hyperglycemic state protocol. At the end of this study, a policy will be developed allowing for the automatic replacement of electrolytes by pharmacists at Carteret Health Care.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-204

Poster Title: Impact of naltrexone for extended-release injectable suspension on alcohol and opioid dependence-related hospital readmissions

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Purpose: Opiate and alcohol abuse-related hospital admissions are a major concern for hospitals nationwide. With limited access to treatment facilities, patients have few options to pursue treatment for addiction when they are ready to stop abusing. Vivitrol is a long-acting opioid antagonist that prevents the user from experiencing effects of abusing alcohol and opiates and reduces cravings. The purpose of this study is to determine if providing Vivitrol to patients admitted to the psychiatric floor for alcohol or opiate abuse will impact alcohol and opiate dependence-related hospital readmissions.

Methods: This study has been approved by the Institutional Review Board. Adult patients admitted to the psychiatric floor for alcohol or opioid dependence who are clinically appropriate for therapy and provide informed consent will be enrolled in the study. Patients who require treatment for any condition with opiates, are unable to complete the entire detoxification period, have psychiatric conditions that require immediate attention as determined by a psychiatrist, female patients who are pregnant or breastfeeding, and patients who fail a naltrexone challenge will be excluded from this study. Participants will receive one 380mg injection of Vivitrol (naltrexone for extended release-injectable suspension) prior to discharge from psychiatric unit. Participants will be required to return to the hospital's Infusion Center for follow-up Vivitrol injections every 28 days for up to 6 months. At the follow-up injections, patients will complete a survey collecting data on age, gender, ethnicity, substance of abuse, substance use in the last 28 days, cravings experienced, hospital re-admissions, employment status, and satisfaction with Vivitrol treatment. Previous hospital admissions,

length of hospital stay, insurance information, and county of residence will be collected as well. All information will be de-identified, recorded electronically and secured on a private server with two levels of password protection. The primary outcome will be the number of hospital readmissions compared to the number of hospital admissions prior to beginning Vivitrol therapy.

Results: n/a

Conclusion: n/a

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-205

Poster Title: Standardized versus non-standardized management of alcohol withdrawal syndrome.

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Purpose: Early intervention with symptom-triggered dosing of benzodiazepines (BZDs) is recommended to prevent progression of alcohol withdrawal syndrome (AWS). Symptom-triggered dosing regimens typically utilize one of the validated Clinical Institute Withdrawal Assessments for Alcohol, revised scales (CIWA-AD or CIWA-Ar) designed to identify symptoms of AWS before they escalate into severe complications. The purpose of this study is to compare length of stay and critical care admission rates in patients diagnosed with alcohol withdrawal syndrome managed with or without the standardized CIWA-AD order set.

Methods: This IRB approved research utilizes a descriptive comparative study design. The study setting is a not-for-profit hospital in the Southeastern United States, whose service area ranks fifth among the state's eight regions in excessive alcohol consumption among its residents. Subject recruitment is based on the 10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10-CM) diagnosis of alcohol withdrawal. Subject selection is dependent on available complete electronic medical record information. Exclusion criteria include: age less than 18 years; admission to psychiatric, emergency and surgical departments; pregnant women; and Department of Corrections patients. Length of stay, critical care unit admission, CIWA-AD score, additional drug therapy required, adverse drug reactions associated with AWS treatment, time from admission to first dose of BZD, treatment duration, comorbidities, inpatient location, age, and gender are the data being collected. Electronically entered data are stored on a private facility server requiring two levels of password protection. Once collection is complete, the data will be de-identified via alphanumerical coding prior to analysis and subsequent reporting of the findings to protect subject confidentiality. Data will be organized with descriptive statistics to include: mean, standard deviation, range, mode, median, frequency, percentage, and correlation coefficient. Inferential statistics will be utilized to determine significance using an alpha of 0.05 to include: two-tailed Student's t-test, Chi-squared analysis, and stepwise regression.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 10-206

Poster Title: Retrospective evaluation of an empiric vancomycin dosing nomogram in achieving goal steady-state trough concentrations in obese adults weighing at least 100 kilograms

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Purpose: More than one-third of adults in the United States are obese, putting them at increased risk for heart disease, stroke, and diabetes. Additionally, the physiologic changes from obesity impact antimicrobial pharmacokinetic properties. These changes affect antimicrobial efficacy and toxicity, especially in weight-based dosing for antimicrobials such as vancomycin. Published studies have offered differing approaches to vancomycin dosing in obesity with variable results. As of yet, there is no consensus. The purpose of our study is to validate a newly implemented vancomycin dosing nomogram in achieving goal steady-state trough concentrations for obese adults weighing at least 100 kilograms.

Methods: This single-center, retrospective cohort study has been submitted to the Institutional Review Board. The primary objective is to describe the percentage of obese adult patients weighing at least 100 kilograms achieving initial steady state goal trough concentrations when dosing was initiated at a dose and frequency consistent with our institutional nomogram. Patients will be identified using reports generated from the Duke Enterprise Data Unified Content Explorer. Inclusion criteria for the study include adult inpatients who weigh at least 100 kilograms with a body mass index of at least 30 kilograms per meter squared. They must receive at least 3 stable vancomycin doses and have at least one steady-state trough concentration obtained. Exclusion criteria are pregnancy, renal replacement therapy, unstable renal function, severe liver dysfunction, and patients 30 days or less post-transplant. For patients receiving multiple courses of vancomycin during a single admission, only the first course will be included in the study. Separate admissions for the same patient will be counted as individual cases. Data collected will include patient demographics such as gender, age, and

weight. Other data collected will include vancomycin indication, dosing regimen, trough concentrations, and timing of doses and troughs. Serum creatinine and estimated creatinine clearance will also be collected. Upon data analyses, the nomogram will be adjusted in subgroups based on weight and renal function.

Results: n/a

Conclusion: n/a

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-207

Poster Title: Risk versus benefit of interrupting oral anticoagulation therapy following gastrointestinal bleed

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Purpose: The purpose of this study is to assess risk versus benefit of interruption of oral anticoagulation (OAC) therapy following gastrointestinal (GI) bleed in patients treated at a community hospital. The primary objective is to compare number of thromboembolic events in patients with duration of OAC interruption less than 30 days from GI bleed onset to patients with duration of OAC interruption greater than or equal to 30 days from GI bleed onset. Secondary objectives include: to compare number of re-bleed events, to compare 30-day all-cause hospital readmission rates, and to compare clinical management of patients.

Methods: This single-center, retrospective cohort study will be submitted to the Institutional Review Board for approval. We will review the electronic medical records of patients admitted for GI bleed or patients who developed GI bleed during hospitalization between January 1, 2010 and December 31, 2016. Patients will be included if they were at least 18 years old and taking at least one OAC at the time of GI bleed. Patients will be excluded if they had a diagnosis of chronic liver disease, end stage renal disease, or if they did not survive the first 72 hours of GI bleed. Patients will be stratified into two cohorts. The first cohort will consist of patients who were restarted on OAC therapy between zero and 30 days after GI bleed onset. The second cohort will consist of patients who were not restarted on OAC therapy within 30 days of GI bleed onset. The primary outcome will be thromboembolic events. Secondary outcomes will include re-bleed events, all-cause hospital readmissions within 30 days after discharge, continuation of original OAC agent, switching from original OAC agent to an alternative OAC agent, OAC agent ordered on discharge, time until OAC agent restarted, OAC not re-started, blood and/or fresh frozen plasma transfusion, treatment with four-factor prothrombin complex concentrate, hospital length of stay, and mortality.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-208

Poster Title: Impact of a procalcitonin guided algorithm on length of stay in inpatients with acute chronic obstructive pulmonary disease exacerbations

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Purpose: Currently, the most common predictor of an acute exacerbation of chronic obstructive pulmonary disease (AECOPD) is the presence of purulent sputum. Although antibiotics are often prescribed for these patients, it has been shown that up to 50 percent of AECOPD cases are of viral origin. The excessive usage of antibiotics can result in increased collateral damage and adverse events. Serum procalcitonin has been found to increase in bacterial infections such as respiratory tract infections but remains low in viral infections. Use of a procalcitonin level may therefore encourage a clinician's decision to forego antibiotics in a patient experiencing an AECOPD.

Methods: This single site, retrospective, cohort study is designed to implement the use of a single procalcitonin level as a surrogate measure for antibiotic usage in AECOPD. Upon admission, based on clinician discretion, the patient will undergo this rapid diagnostic test, which will help guide antibiotic therapy throughout their hospital stay. This procalcitonin guided therapy cohort will be compared to a historical cohort utilizing data collected before the implementation of procalcitonin guided therapy. The primary objectives are to compare the duration of antibiotic usage in regards to AECOPD and assess the effect on length of stay between groups. Thirty day readmission rates will be compared between the procalcitonin guided therapy group and historical control as a secondary endpoint. Additionally, a cost-avoidance analysis will be conducted utilizing length of stay, medication usage, and readmission rates with the use of procalcitonin as a marker for bacterial infection in AECOPD compared to the historical control. This analysis will be assessed in cost per day avoided.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-209

Poster Title: Urine Culture Specific Antibiogram Development for Outpatient Facilities Arranged Within a Multi-Hospital Health System

Primary Author: John Norris, FirstHealth Moore Regional Hospital, NC; **Email:** jnorris@firsthealth.org

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Purpose: Urinary tract infections (UTIs) are the most commonly seen community acquired infections in the US, accounting for more than 8.6 million outpatient visits each year. Appropriate use of antibiotics leads to microbial resistance, but misuse of antibiotics greatly accelerates the occurrence. The over-prescribing of antibiotics in the community has become a national epidemic, leading to more severe, resistant infections in the emergency and acute care settings. The Food and Drug Administration recently released a safety alert for fluoroquinolone use in uncomplicated acute cystitis further limiting oral antibiotic options for urinary tract infections.

Methods: To minimize resistance and optimize appropriate antimicrobial therapy, we will assess urine cultures collected from outpatient facilities affiliated within our healthcare system to identify the in-vitro antimicrobial resistance patterns specific to our community. Data will be collected through a retrospective review of outpatient urine culture data from January 1, 2016 to September 9, 2016. Organism identification and antimicrobial susceptibilities were extracted via an automated infection control surveillance system. This surveillance system consolidated organism-specific urine cultures and their respective antimicrobial susceptibilities. Each common pathogen was identified, and specific resistances and susceptibilities data were reviewed. Given the prominent use of antibiotics in the ambulatory setting, specific attention was paid to oral treatment options. Organisms with less than 30 samples of growth on cultures were excluded from this review.
Once community antimicrobial resistance patterns are identified, information will then be disseminated to ambulatory care providers affiliated within our healthcare system. Education will be provided regarding resistance issues, most prevalent uropathogens, and appropriate

empiric options. Knowledge of community urine culture resistance patterns will also allow comparison to our current inpatient antibiogram. Comparison of urine cultures to overall antimicrobial resistance patterns may lead to subsequent research opportunities, if antimicrobial susceptibility differences are found between culture sources.

Results: n/a

Conclusion: n/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-210

Poster Title: Prescribing characteristics of proton pump inhibitor orders at a small, rural academic medical center

Primary Author: Lundy Gunn, Harnett Health, NC; **Email:** lrgunn1231@email.campbell.edu

Additional Author (s):
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Kim Kelly

Purpose: The true cost of inappropriate proton pump inhibitor prescribing behavior is largely unknown and has not been clearly defined in the small, rural inpatient hospital setting. Recent studies show associations between proton pump inhibitor therapy and adverse effects such as Clostridium difficile infection, community-acquired pneumonia, acute kidney injury, chronic kidney disease, and increased risk of fractures. The objective of this study is to characterize the rate of inappropriate proton pump inhibitor orders for adult inpatients at a small, rural academic medical center.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify adult inpatients admitted who receive a medication order for a proton pump inhibitor. The following data will be collected: current proton pump inhibitor medication, dose, route, frequency, indication, age, length of stay, C. difficile tests if collected, and whether the patient was discharged on proton pump inhibitor therapy. ICD-10 diagnosis codes and provider documentation will be reviewed to determine indication for proton pump inhibitor treatment. All data will be recorded without patient identifiers and maintained confidentially. Aggregate rate of adult inpatients receiving proton pump inhibitor for all inappropriate indications will be determined as the primary endpoint. Secondary endpoints include rates of adult inpatients receiving proton pump inhibitor orders for individual clinical indications, the number of adult inpatients receiving proton pump inhibitor orders for inappropriate or unclear indications, the number of patients discharged on inappropriate proton pump inhibitor therapy which was not a prior home medication, rate of adult inpatients receiving proton pump inhibitor orders with doses higher than those recommended by guidelines, and incidence of C. difficile infection in patients receiving proton pump inhibitors.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-211

Poster Title: Levofloxacin, ciprofloxacin, and ceftriaxone in the hospital for the treatment of uncomplicated urinary tract infection: A retrospective medication-use evaluation

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Additional Author (s):
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Kim Kelly

Purpose: Antimicrobial resistance is a global public health challenge accelerated by the over prescribing of antimicrobial medications for conditions that are normally self-limiting; this not only increases the risks of adverse effects, but can also result in longer hospital stays, and increased mortality. Acute uncomplicated urinary tract infection is one of the most common indications for prescribing antimicrobials for otherwise healthy women. The purpose of this study is to evaluate the inappropriate utilization of levofloxacin, ciprofloxacin, and ceftriaxone therapy in hospitalized patients for uncomplicated urinary tract infection at a rural, community hospital in North Carolina.

Methods: A retrospective review of electronic medical records (EMR) will be conducted to evaluate the use of levofloxacin, ciprofloxacin, and ceftriaxone for the treatment of uncomplicated urinary tract infection. A report will be generated through the EMR to identify patients who received levofloxacin, ciprofloxacin, and ceftriaxone between June 1, 2016 and August 31, 2016. A second report will be generated to identify patients between June 1, 2016 and August 31, 2016 who had “Urinary tract infection, site not specified” ICD 10 code assigned upon discharge. The two reports will be used to review medical records retrospectively to screen patients for eligibility to meet the inclusion/exclusion criteria for inclusion in the study. Only adult patients admitted to the inpatient medical or observational unit will be included. Patients treated with levofloxacin, ciprofloxacin or ceftriaxone for an indication other than urinary tract infection or asymptomatic bacteriuria will be excluded. The cohort will be evaluated for percent of levofloxacin, ciprofloxacin, and ceftriaxone used for the inappropriate

treatment of uncomplicated urinary tract infection. Additionally, it will be evaluated for percent of patients with uncomplicated urinary tract infection treated with a regimen that is in compliance with Infectious Disease Society of America (IDSA) treatment guidelines and percent of patients with uncomplicated urinary tract infection treated for the appropriate duration of therapy as recommended in the IDSA treatment guidelines.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-212

Poster Title: Outcomes from the implementation of a pharmacy technician discharge medication review program

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Purpose: Providing patients with an up-to-date, accurate medication list is one of The Joint Commission's National Patient Safety Goals and provides a safe transition of care out of the hospital. While pharmacists are considered medication experts, budget constraints often prevent institutions from having pharmacists review discharge medication lists for every patient prior to discharge. Therefore, a program was designed using pharmacy technicians to increase the reach of a pharmacy discharge medication review program while minimizing budgetary impact. The study objective is to evaluate the impact of a pharmacy technician-led discharge medication review on 30-day hospital re-presentation rates.

Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients being discharged who do not already qualify for our existing transitions of care medication review program. The pharmacy technician will review the discharge medication list for accuracy and report any discrepancies identified to a pharmacist. The pharmacist will then contact the prescriber for clarification regarding the discrepancies determined to be clinically relevant. Both the pharmacy technician and pharmacist will complete a data collection form to be reviewed by the principal investigator. The following data will be collected: patient age, gender, race, ethnicity, admission diagnosis, discharge medications, discharge medication discrepancies, discharge disposition, and 30-day hospital re-presentations. The principal investigator will review the type of medication discrepancies identified, the percentage of high risk medications involved, and unplanned hospital re-presentations 30 days after discharge. High-risk medications are defined as any anticoagulant, opioid, or insulin.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 10-213

Poster Title: Impact of incorporating student pharmacists in a transitions of care (TOC) program in a community hospital.

Primary Author: Jenna Solomon, Mission Hospital, NC; **Email:** jenna.solomon@msj.org

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Purpose: Transitions of care (TOC) is now recognized as a strategic component of hospitalization, and has expanded the role of pharmacists. Some institutions may not have the pharmacist resources for TOC. Student pharmacists can serve as pharmacist extenders in TOC to expand the reach of the inpatient pharmacist, and to provide additional cost-benefit to the hospital. The purpose of this project is to evaluate the impact of student pharmacists performing TOC services while teamed with an inpatient pharmacist.

Methods: This study will be a before and after comparison of TOC activities between a dedicated TOC pharmacist (before) and a student pharmacist paired with a TOC pharmacist (after). From September 2013 to May 2014, a study was completed during which a dedicated TOC pharmacist provided inpatient TOC services to a select group of inpatients. The pharmacist reviewed medication history and admission reconciliation, assessed barriers with the patient and caregiver, reviewed discharge reconciliation, performed discharge education, and communicated with the next level of care. Any patient with a planned discharge home from the medical-surgical progressive care unit or the pulmonary care unit was included in the study. Prospective analysis demonstrated a 50% reduction in 30-day re-presentation rates ($p < 0.01$). From June 2014 to October 2014, student pharmacists plus a pharmacist provided all inpatient and transitional medication management for patients discharging home. The pharmacist provided traditional inpatient care, and a student provided transitions of care for the same patients. Comparisons will be made in 30-day re-representation rates with respect to volume of patients seen and volume of interventions per week. Institutional Review Board approval was obtained.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-214

Poster Title: Anticoagulation Stewardship Program Development: Impact of Pharmacist Intervention on Anticoagulant Therapy in Patients with Cardioembolic Stroke Requiring Anticoagulation, a Pilot

Primary Author: Anna Bieniek, Mission Hospital, NC; **Email:** annabieniek623@gmail.com

Additional Author (s):
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Purpose: Health-related stewardship programs ensure accountability in the management of resources, like medications. Tenets of stewardship programs include accountability, expertise, action, tracking, reporting, and education. Anticoagulation stewardship programs target safety, quality, and financial factors in all aspects of the medication use process with the goal to optimize the use of anticoagulants and clotting factor concentrates. A multidisciplinary committee currently monitors anticoagulation safety events and leads initiatives involving anticoagulants. The purpose of this study is to simulate stewardship interventions in a pharmacist-led pilot to illustrate the benefits in optimization of anticoagulation therapy and the need for an anticoagulation stewardship program.

Methods: This pilot is a prospective, single-center study simulation of an anticoagulation stewardship program on a neurology inpatient unit with a retrospective comparator. Pharmacists and providers will be educated by the investigator prior to the start of the pilot on guideline recommendations. Pharmacist intervention will include assessing anticoagulant therapy for appropriateness, evaluating medication access needs at discharge, commencing anticoagulation clinic referral process, and completing discharge patient education. Patients included in this study are age greater than 18 years of age, have a diagnosis of cardioembolic stroke, and admission to the pilot unit. Exclusion criteria include non-cardioembolic stroke and therapy with antiplatelet agents. The primary outcome is the significance pharmacist interventions targeted toward optimization of anticoagulation therapy upon discharge. Optimal therapy is defined as guideline-based, comorbidity-appropriate, and financially accessible.

Secondary outcomes include adherence to anticoagulation clinic follow-up, adherence to therapy, 30-day re-admission rate, bleeding events, medication access, and survey of provider education.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-215

Poster Title: Impact of an expanded pharmacist-run video telehealth anticoagulation service in a rural health system

Primary Author: Marissa Rogoff, Mission Hospital and UNC Eshelman School of Pharmacy, NC; **Email:** marissa.rogoff@msj.org

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Purpose: Video telehealth is an emerging technology that can be utilized for disease state management, particularly for patients in rural communities with limited access to healthcare. Video telehealth may be useful for patients in western North Carolina prescribed warfarin who have to drive more than an hour each way for dosing and monitoring. Our objective is to determine the effectiveness of a recently implemented and expanded video telehealth anticoagulation service as measured by percentage of individual time in therapeutic range (iTTR) compared to baseline iTTR.

Methods: This study is a before-and-after comparison of patients managed by an outpatient anticoagulation clinic from August 2016 through February 2017. Patients will serve as their own controls. A subgroup of newly referred clinic patients will be analyzed separately. Data will be electronically abstracted, including calculations of the iTTR. Data collected includes age, gender, race, ethnicity, patient address, indication and duration of warfarin therapy, dates and results of INRs, number of visits, pharmacist visit time, number of cancellations/ no-shows, and number of warfarin dose changes. Rates of adverse effects such as thromboembolism, major bleeding, and clinically relevant non-major bleeding will also be evaluated. Patients will complete a survey before and after participating in the video telehealth service to assess perception of and satisfaction with anticoagulation video telehealth monitoring. Institutional Review Board approval was granted prior to study initiation.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-216

Poster Title: Evaluation of antibiotic administration using a multi-disciplinary bundle in septic shock patients who present to the emergency department

Primary Author: Rylee Rankin, Mission Hospitals, NC; **Email:** ryleerankin@yahoo.com

Additional Author (s):
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Purpose: The Surviving Sepsis Campaign stresses the importance of timely antibiotic administration in septic patients. More specifically, it is recommended that antibiotics are administered to patients within three hours of arrival and within one hour of recognition of septic shock. As a result, Mission Hospital has implemented an emergency department (ED) Sepsis Plan. This multi-disciplinary order set assists providers in the rapid recognition of sepsis and provides treatment options including antibiotic recommendations. The objective of this study is to evaluate the use of the ED Sepsis Plan at Mission Hospital with a specific focus on its effect on antibiotic administration times.

Methods: In this single-center, retrospective, observational study, we evaluated 585 patients greater than or equal to 18 years of age who presented to the Mission Hospital ED with septic shock from December 4, 2013 to April 30, 2016. Patients transferred from another hospital, hospice, or court/law enforcement were excluded. Study subjects were categorized into three groups based on the utilization of the ED Sepsis Plan: patients with no ED Sepsis Plan ordered, patients with ED Sepsis Plan ordered, and patients with ED Sepsis Plan ordered but not utilized for antibiotic orders. Demographics, ED Sepsis Plan order time, first antibiotic order time, first antibiotic administration time, antibiotics administered during hospital stay, hospital length of stay, ICU admission, and discharge disposition were obtained. Time from patient arrival to antibiotic administration, time from antibiotic order to antibiotic administration, and time from recognition of septic shock to antibiotic administration were also determined. This study has received Institutional Review Board approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-217

Poster Title: Assessment of the initial management of meningitis in a six hospital health system

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Additional Author (s):
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Purpose: According to the Center for Disease Control, bacterial meningitis leads to death in approximately one in four cases. The disease progression is complex and can change rapidly. Appropriate medication prescribing and initial testing is paramount to the successful treatment of these patients, and omission in either of these areas may dramatically impact outcomes. The aim of this project is to assess the initial management in patients admitted to our six hospital health-system with suspected meningitis, compared to treatment guidelines. If current management is deemed sub-optimal, this may prompt the development of a meningitis specific order set within the health system.

Methods: This is an Institutional Review Board approved, retrospective, cohort study using an electronic medical record system. Patients will be included if they are 2 years to 100 years old and admitted with a diagnosis of meningitis to any Mission Health system hospital between November 2015 and November 2016, with at least one antibiotic administration. Data to be collected on each patient includes: age, gender, race, antibiotics given, doses, timing of administration, lab tests, screening exams, hospital campus, and culture results. Data points will be categorized as “screening” (example: computerized tomography scan), “testing” (example: viral polymerase chain reaction tests), and “treatment” (example: drug dosing and timing). If the management differs from current guidelines in any category, then it will be considered a failure to follow guidelines. Individual components within each category (testing, screening, and treatment) will be reviewed and evaluated as well. The primary objective is to determine the frequency at which providers in the Mission Health system order in accordance with expert guidelines. Secondary objectives are to assess individual parts (screening tests, lab tests, drugs, doses, and timing) of the expert guidelines compared to physician ordering and compare treatment differences by facility.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-218

Poster Title: Evaluation of the characteristics and financial implications of inpatient cancer and immunologic treatments

Primary Author: Austin Ginn, Mission Hospitals, NC; **Email:** austin.ginn2@msj.org

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Jolynn Sessions

Purpose: In today's healthcare environment, it is paramount that patients receive the correct level of care for the healthcare setting. Many new therapies for cancer and immune disorders are far more costly than most medications in an acute care setting, and are occasionally administered to patients while they are admitted at our institution. This raises the question of how often we are using these medications when they could be given in an outpatient setting instead. Our goal is to better understand the characteristics of these inpatient therapies, and uncover costs associated with the administration of these medications.

Methods: This study is an IRB-approved, retrospective cohort study using electronic chart review of patients who were administered medications from a pre-selected list of high-dollar treatments while bedded in an inpatient ward at Mission Hospital. Inclusion criteria: Age > 18, Receiving 1 or more of a list of 30+ medications during admission between 1/1/2014 - 5/31/2016. Exclusion criteria: Pediatric oncology patients, patients with incomplete medical records. No control group on this study, as it is descriptive in nature. Primary outcome: Quantify administration rates of a group of high dollar medications. Secondary outcomes: Characterize the admission details surrounding patients receiving such medications such as admission reason, length of stay, readmission rates, 30d mortality. Determine direct costs associated with the dispensing and administration of these medications. Data collection variables: Age, gender, location, drug given, time drug given, admit date/time, depart date/time, LOS, admit reason, diagnosis for high-cost medicine, 30d mortality, 90d mortality, prescribing MD, admitting MD, total cost of hospital stay, cost of medication, payment data.

Results: n/a

Conclusion: n/a

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Evaluative Study

Session-Board Number: 10-219

Poster Title: Inter-professional global health experience: A clinical pharmacy perspective

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Purpose: Global health opportunities provide many educational benefits for clinical pharmacists. In 1990, Mountain Area Health Education Center (MAHEC) partnered with the Shoulder-to-Shoulder organization and began an annual inter-professional short-term medical brigade to Honduras. The pharmacy residency has participated in the experience since 2007. The objectives of this study were to describe the global health experiences of members of the inter-professional team specifically from clinical pharmacists' perspectives and to understand the educational impact of the experiences.

Methods: A semi-structured interview study using a nine question interview guide was conducted.
1. Have you ever been to a country in the developing world?
2. Have you participated in medical brigades in the past?
3. What led you to participate in this trip?
4. Tell me about your typical day in Honduras.
5. Tell me about one of your most memorable experiences.
6. Tell me about a learning experience.
7. Tell me about a challenging experience.
8. Describe an experience that captures the essence of this trip.
9. Do you have any other stories or pieces of information you would like for me to know to help us better understand your experience?
Fourteen MAHEC pharmacy and family medicine faculty and residents who participated in the brigade during Fall 2014 and/or 2015 were interviewed. A phenomenological, thematic content

analysis (MAXQDA: Qualitative Data Analysis Software) of all participant interviews was conducted. Five interviews were transcribed verbatim and used to create the initial coding system. The remaining nine interviews were coded auditorily; representative quotes were transcribed verbatim. The results in this poster focus on the pharmacy perspective. Significant quotes from pharmacists were identified to represent and describe each theme. Mission Institutional Review Board approved this qualitative interview research.

Results: Five (35.7%) clinical pharmacists and nine (64.3%) physicians were interviewed. Over half of the pharmacists had previous global health experience, but only one spoke Spanish. Five themes that describe pharmacists' experiences were identified: 1) Individual Experiential Learning; 2) Meaningful Impact; 3) Experiences in Context; 4) Personal Growth; and 5) Sense of Community. Pharmacists expanded clinical and professional skills such as resourcefulness, inter-professional collaboration, communication, and cultural awareness. They questioned the impact they made on the lives of patients in and surrounding Camasca, and they questioned the sustainability and the meaning of their work. Pharmacy participants used previous global health experiences and professional experiences in the United States to help them orient and understand their experiences in Honduras. The medical brigade to Honduras provided pharmacy participants the opportunity to disconnect from their daily schedules and reflect on their experience and its impact on their personal and professional lives. Both pharmacy and family medicine participants recognized the sense of community among the people of Camasca, among the participants in the brigade, and between the people of Camasca and the brigade group.

Conclusion: Global health experiences can help residents achieve residency competencies: 1) Humanism and cultural proficiency; 2) Therapeutic knowledge; 3) Patient care; 4) Inter-disciplinary collaboration; and 5) Communication. Global health experiences are an innovative and effective use of pharmacy services.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-220

Poster Title: Implementation of a pharmacist-run naloxone clinic in a family medicine center

Primary Author: Ryan Tewell, New Hanover Regional Medical Center, NC; **Email:** ryan.tewell@nhrmc.org

Additional Author (s):
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Purpose: The current opioid epidemic affecting the United States has resulted in a growing number of opioid overdoses. Respiratory depression is the ultimate cause of death in these patients. In 2016 the CDC published guidelines about the prescription of opioids for chronic pain recommending the prescription of naloxone to patients at risk of an opioid overdose. The purpose of this study is to implement a pharmacist-run clinic to identify patients at risk for an opioid overdose, provide a naloxone prescription as well as education to patients and caregivers on the utilization of naloxone to reverse an opioid overdose.

Methods: This study will seek approval from the Institutional Review Board at New Hanover Regional Medical Center (NHRMC). A report will be generated through NHRMC's electronic medical record to identify established patients of the family medicine clinic meeting study criteria. Patients with a current opioid prescription who meet at least one of the following criteria will be included in the study: opioid at a dose of greater than or equal to 50 morphine milligram equivalents (MME) per day, and/or a history of overdose, and/or a history of substance abuse, and/or concomitant chronic use of an opioid and benzodiazepine. Identified patients will be contacted and scheduled for a pharmacy visit to receive education about the use of naloxone as well as a prescription for naloxone. Patients will be encouraged to bring a family member or friend to the visit for participation in naloxone education. Naloxone access will be provided by the NHRMC outpatient pharmacy or another community pharmacy. The following demographics will be studied: patient age and sex, overdose risk factors, number of patients and caregivers educated, and number of patients who obtain naloxone. Patients who seek medical care for overdose treatment as well as request a naloxone refill will also be recorded. The primary outcome is a composite of the number of patients who are educated on and acquire naloxone.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-221

Poster Title: Does thrombin dose matter for intra-operative hemostasis? A retrospective case-controlled study

Primary Author: Barry Stevenson, New Hanover Regional Medical Center, NC; **Email:** barry.stevenson@nhrmc.org

Additional Author (s):
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Purpose: Bleeding is a serious complication associated with surgical procedures and prompt hemostasis intraoperatively is imperative. Thrombin, a hemostatic agent, is often employed due to its ability to convert endogenous fibrinogen into fibrin leading to hemostasis. Limited data exists regarding thrombin doses and concentrations to optimize hemostasis. Our institution switched from using thrombin 20,000 unit to 5000 unit vials. Hence, the objective of this study is to compare thrombin dosing strategies to determine effectiveness and safety in providing hemostasis intra-operatively.

Methods: This retrospective study will evaluate adult patients, age greater than or equal to 18 years, who underwent a neurosurgical spine or orthopedic spine procedure and received thrombin intraoperatively. Patients will be case matched in a one to one ratio based on surgical procedure and duration of surgery. Patients will be stratified by dose defined as low versus high dose thrombin: less than 20,000 units versus greater than or equal to 20,000 units. Data collected will include baseline demographics, laboratories, surgical procedure performed, intra-operative data, blood products administered, and adverse drug reactions. In addition, concentration of thrombin used intraoperatively will be compared. Effectiveness of thrombin for hemostasis will be measured by identifying total blood loss during surgery, blood products administered, and hemoglobin trends for 72 hours after end of surgery time. Safety will be measured by identifying adverse drug reactions including thromboembolism, cerebrovascular accidents, acute coronary syndrome, and anaphylactoid type reactions. A cost analysis will be performed comparing low dose thrombin versus high dose thrombin to determine if a cost

savings exists with the change to a smaller vial size of thrombin. Statistics will be performed using Statistical Analysis Software Package and a p-value less than 0.05 will be considered significant.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-222

Poster Title: Transitions of care from start to finish: Impact on 30 day health care utilization rates in a community teaching hospital

Primary Author: Corianne Wood, New Hanover Regional Medical Center, NC; **Email:** corianne.wood@nhrmc.org

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Purpose: In the past decade, care coordination services have become a focal point in health care. Hospital systems have implemented services from emergency department admission to discharge and outpatient follow-up. Our facility has implemented medication reconciliation technicians in 2009 and multiple additional services since 2012. The objective of this quality improvement study is to determine how all of these services at a community teaching hospital work together to influence 30 day health care utilization rates defined as emergency department visits and hospital readmission.

Methods: This retrospective review will analyze patients discharged to home or home health. Patients will be excluded if under 18, pregnant, or discharged to skilled nursing or other facility. Data from January 2016 through January 2017 will be collected and assessed. Transitions of care services analyzed include: admission medication reconciliation, prospective medication access barrier assessment, medication assistance evaluation, discharge medication reconciliation, discharge counseling, our facility's outpatient pharmacy, outpatient transitions of care team, and outpatient pharmacy refill synchronization and mail order delivery to patients. A report from the electronic medical record (EPIC) will be created to collect admission and discharge dates, demographic information, and assess which services were provided to each patient. Reports on fill dates, medication assistance, and synchronized mail-order pharmacy participants will be generated from the outpatient pharmacy system (QS1). Patient lists, EPIC reports, and QS1 reports will be utilized to perform statistical analyses to determine how each pharmacy role impacts 30 day health care utilization rates.

Results: n/a

Conclusion: n/a

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-223

Poster Title: Impact of the Outpatient Pharmacy's Pharmacy Advantage program on decreasing hospital encounters of clinic patients

Primary Author: Joshua Jones, New Hanover Regional Medical Center, NC; **Email:** joshua.jones@nhrmc.org

Additional Author (s):
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Purpose: The lack of adherence to medication is a factor in the occurrence of re-admissions and emergency department visits in patients. Medication synchronization and shipping can decrease potential barriers to medication compliance. The objective of this study is to determine the effectiveness of New Hanover Regional Medical Center Outpatient Pharmacy's Pharmacy Advantage program in decreasing potentially preventable hospital encounters through medication synchronization and shipping.

Methods: This study will be submitted to the Institutional Review Board for approval. Costal Family Medicine and Internal Medicine clinic patients will be identified via the Pharmacy Advantage program's syncing and shipping enrollment list. The prevalence of hospitalization and non-injury emergency department visits in these patients prior to Pharmacy Advantage program enrollment will be compared to the prevalence of hospitalization and non-injury emergency department visits after enrollment. A retrospective review of the intervention group will analyze the time period from twelve months before enrollment into the Pharmacy Advantage program until the date of data collection initiation. This designated amount of time prior to enrollment will coincide with the time immediately preceding enrollment into the Pharmacy Advantage program. A baseline will be established by identifying the prevalence of the primary outcome in each clinic's respective patient population for the twelve month time period prior to the establishment of the Pharmacy Advantage program. The prevalence of hospitalizations and non-injury emergency department visits for patients in this baseline group will be recorded and compared to the results of clinic patients that are enrolled in the Pharmacy Advantage program. The type of hospital encounter will also be recorded for patients in both the baseline and intervention groups that meet the primary outcome during the designated time period.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-224

Poster Title: Hemodynamic effects of ketamine versus etomidate in pre-hospital emergency transport services

Primary Author: Lucy Stanke, New Hanover Regional Medical Center, NC; **Email:** lucy.stanke@nhrmc.org

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William Powers

Purpose: Rapid sequence intubation and sedation are often required in managing critically ill patients in the pre-hospital setting. The standard rapid sequence intubation induction agent in this population is etomidate which has neutral hemodynamic effects. With hemodynamic stability being imperative, ketamine has gained new interest in pre-hospital management as it has been reported to have positive hemodynamic effects. Limited data exists to support ketamine as an alternative to etomidate, particularly in the pre-hospital setting. The objective of this study is to determine if a difference exists in hemodynamics after administration of ketamine versus etomidate in pre-hospital patients.

Methods: With Institutional Review Board approval pending, this retrospective comparative study will evaluate consecutive adult (18 years of age or greater) patients treated with ketamine versus etomidate by a regional emergency transport service. This service consists of a county-wide emergency medical service, a critical care transport system with mobile intensive care units and an air ambulance service. Ketamine and etomidate are available to these services for induction of rapid sequence intubation and sedation. All data will be collected from the pre-hospital electronic medical record from December 2015 to December 2016. Data extracted will include ketamine and etomidate doses, blood pressure, heart rate, number of intubation attempts and lost airways, dose and time of adjunct medications, indication for advanced airway placement, admitting service and patient demographics. The primary outcome will be measured by assessing patient hemodynamics for two measurements prior to administration of ketamine or etomidate and for two measurements up to fifteen minutes post-administration or

until additional sedative medications are administered. Data will be used to evaluate if initial hemodynamic readings should influence the decisions to use ketamine or etomidate in critically ill patients. Data will be analyzed using statistical software with a p-value of less than 0.05 being considered significant.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-225

Poster Title: Evaluating diabetes control and metabolic risk factors in patients with human immunodeficiency virus after the addition of a pharmacist to a multidisciplinary primary care clinic

Primary Author: Jenna Picton, New Hanover Regional Medical Center, NC; **Email:** jenna.picton@nhrmc.org

Additional Author (s):
Mackie King

Purpose: With the development of more potent, convenient, and tolerable anti-retroviral therapies, management of human immunodeficiency virus (HIV) has transitioned from HIV-related illnesses to chronic disease state management as this population lives longer, healthier lives. Literature suggests patients with HIV have 50-100% increased risk of cardiovascular (CV) disease. Management of modifiable risk-factors has become a priority as leading causes of death in this population transitions from HIV-related towards CV-related causes. While literature supports pharmacist impact on viral markers in HIV clinics, little is known about potential benefits of pharmacist-collaboration managing chronic co-morbidities for patients with HIV in the primary care setting.

Methods: This study is a retrospective study involving patients with diagnoses of diabetes and HIV seen in a primary care clinic. An EPIC report will identify patients seen within the clinic with the above diagnoses. The intent is to follow patients from their establishment with the clinic (T minus x) through the time when a pharmacist was introduced to the multi-disciplinary team (T equals 0) and up until as recent as possible (T plus x). Based on data availability, this timeline approach will be utilized using repeated measures within the same patient to draw comparisons in diabetes control before and after the introduction of pharmacists to the multidisciplinary team. If this is not feasible due to a large discrepancy between patients who established with the clinic prior to the initiation of a pharmacist and those still active within the clinic afterwards, aggregate data will be collected on each group as a whole. Data collection points include hemoglobin A1c, blood pressure (BP), low-density lipoprotein (LDL), CD4 count, HIV-RNA viral load, weight, statin therapy, and anti-retroviral therapy. The primary objective will assess percentage of patients achieving individual goals set by Centers for Medicare and

Medicaid Services/National Committee for Quality Assurance for hemoglobin A1c, BP, and LDL. Secondary objectives are percentages of patients achieving composite primary endpoint and patients achieving hemoglobin A1c less than 7 percent.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-226

Poster Title: Impact of a spontaneous awakening trial and spontaneous breathing trial protocol implementation on the amount and duration of sedation and analgesia in the critically ill

Primary Author: Stephanie Price, New Hanover Regional Medical Center, NC; **Email:** stephanie.price@nhrmc.org

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Purpose: Daily spontaneous awakening trials (SAT) have the potential to decrease the occurrence of oversedation in patients. When paired together with spontaneous breathing trials (SBT), SATs lead to extubation more quickly after passing an SBT as patients are more alert and neurologically prepared for the removal of mechanical ventilation. Literature has shown that paired SAT/SBT protocols lead to less ventilator days and decreased ICU length of stay (LOS). The purpose of this study is to determine if a SAT/SBT protocol decreases the amount and duration of sedation and analgesia in mechanically ventilated patients.

Methods: This will be a retrospective study (IRB pending) of two cohorts of patients before and after protocol implementation. Our facility's ventilator associated pneumonia protocol addresses spontaneous awakening trials. The respiratory extubation weaning protocol addresses criteria for extubation and is performed by the respiratory therapist (RT). However, both protocols are unclear regarding concomitant SAT/SBT and the criteria for qualifying patients. The SAT/SBT protocol will define SBT criteria based on hemodynamic stability and timing of SAT/SBT. Nurses and RTs will be educated on the protocol. Data will be collected pre- and post-protocol implementation in medical and surgical mechanically ventilated patients. Data collection will include patient demographics, ventilator days, amount of sedation/analgesia, wake up assessments, Richmond Agitation-Sedation Scale (RASS), Critical Care Pain Observation Tool (CPOT), ICU and hospital length of stay. The data will be analyzed to determine the amount and duration of sedation and analgesia before and after the implementation of a concomitant SAT/SBT protocol.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-227

Poster Title: Does the prophylactic use of epicardial application of amiodarone-releasing hydrogel prevent postoperative atrial fibrillation in coronary artery bypass grafting patients?

Primary Author: Elizabeth Price, New Hanover Regional Medical Center, NC; **Email:** elizabeth.price@nhrmc.org

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Purpose: Postoperative atrial fibrillation (POAF) is the most frequently occurring complication following cardiothoracic procedures. Current clinical practice utilizes amiodarone for the prevention of POAF, however, the associated systemic side effects are extensive. The administration of amiodarone directly to the epicardial tissue via a hydrogel delivery system has been shown to localize amiodarone to the cardiac tissues while minimizing amiodarone plasma concentrations. The aim of this study is to assess the effectiveness of amiodarone-releasing hydrogel for the prevention of postoperative atrial fibrillation in patients undergoing coronary artery bypass grafting.

Methods: Upon institutional review board approval, patients undergoing coronary artery bypass grafting (CABG) will be identified by accessing electronic medical records and by referring to a composite list of patients that received amiodarone-releasing hydrogel during CABG procedures. Patients will be case matched in a one to one ratio to patients that did not receive epicardial amiodarone. Data to be collected will include: age; sex; race; smoking status; history of stroke, myocardial infarction, heart failure, atrial fibrillation, hypertension and chronic obstructive pulmonary disease; previous CABG; previous percutaneous coronary intervention (PCI), preoperative heart rate, blood pressure, QT interval, serum potassium, and serum magnesium; use of milrinone, dobutamine, dopamine, norepinephrine, vasopressin, beta blockers, and albuterol; total time of CABG; amiodarone dose; documentation of POAF or other postoperative arrhythmias; total length of hospital stay, and mortality. All data collected will be de-identified and securely maintained in an electronic database. Data will be analyzed to determine the prevalence of POAF in patients that received epicardial amiodarone versus patients that received standard treatment with intravenous amiodarone.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 10-228

Poster Title: Evaluation of the safety and financial impact of administering EPOCH-containing regimens in the outpatient setting

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Additional Author (s):
Jay Brown

Purpose: A number of chemotherapy regimens are administered in the inpatient setting to allow for a high level of monitoring and rapid intervention in the result of adverse reactions. However, as healthcare shifts to a patient-centered and financially responsible focus, utilization of the lowest-cost venue for administration of chemotherapy is important in order to maximize the value of care. One such consideration for outpatient administration is etoposide, prednisone, vincristine, cyclophosphamide, doxorubicin (EPOCH). The purpose of this study is to evaluate the safety and financial impact of transitioning EPOCH-containing regimens to the outpatient setting.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients that have been administered an EPOCH-containing regimen within the health system. Data to be collected will include patient demographics, EPOCH regimen administered, site of care administration (inpatient or outpatient), hospital admissions following each cycle, cause for admission, occurrence of extravasation, length of hospital stay, length of time for outpatient administration, savings from hospital day avoidance, and inpatient/outpatient drug costs. All data will be recorded without patient identifiers and maintained confidentially. Safety, defined by need for hospital admission, will be evaluated based on site of care administration. Descriptive statistics will be used to evaluate data sets.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-229

Poster Title: Evaluation of a Risk Assessment Model to Predict Infection with Extended-Spectrum Beta-Lactamase-Producing Enterobacteriaceae and Methicillin-Resistant Staphylococcus Aureus

Primary Author: Amanda Teachey, Novant Health Forsyth Medical Center, NC; **Email:** alteachey@novanthealth.org

Additional Author (s):
Steven Johnson
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David Priest

Purpose: Previous reports have evaluated risk stratification tools to identify patients at risk for multidrug resistant (MDR) infections. There are currently no studies identified that have evaluated a risk prediction model for multiple organisms, specifically extended-spectrum beta-lactamase-producing Enterobacteriaceae (ESBL-EKP) and methicillin-resistant Staphylococcus Aureus (MRSA), in order to develop a comprehensive risk prediction tool for hospitalized patients. The objective of this study is to describe the ability of a previously developed risk prediction model to predict infection with ESBL-EKP and MRSA upon hospital admission at our facilities and secondarily, to describe the ability of MRSA surveillance PCR testing to predict MRSA infection.

Methods: This multicenter, retrospective, case control study has been approved by the Institutional Review Board. Patients will be included if 18 years of age or more and admitted to Novant Health Forsyth Medical Center or Novant Health Presbyterian Medical Center between April 1st, 2016 to September 30th, 2016 with culture-confirmed infection due to ESBL-EKP and MRSA (cases), or non-ESBL-EKP and methicillin-sensitive Staphylococcus Aureus (controls). Control subjects will be matched to a corresponding case subject with MDR infection using a 1:1 ratio based on pathogen, source of isolate, and hospital ward type. Included patients will receive a weighted score assigned to each of the five risk factors determined in the previously-developed model developed through logistic-regression based prediction scores calculated on variables independently associated with ESBL-EKP isolation (hospitalization 12 months prior to

index admission, beta-lactam or fluoroquinolone 3 months prior to index culture, transfer from another healthcare facility, urinary catheterization 30 days prior to index culture, immunosuppressive drug therapy during the 3 months prior to index culture).Positive predictive value, negative predictive value, sensitivity, specificity, and accuracy will be calculated at various point cut offs for each of the resistant organisms. The receiver operating characteristic area-under-the-curve (ROC-AUC) will be determined for each group. A logistic regression model will be used in order to create a new risk assessment scoring model if the ROC-AUC is < 0.8.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-230

Poster Title: Effects of parenteral nutrition approaches on growth velocity in the neonate during transition to enteral feeds

Primary Author: Laurie Rollins, Novant Health Forsyth Medical Center, NC; **Email:** lrollins@novanthealth.org

Additional Author (s):
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Purpose: There is very little data regarding the comparison of custom parenteral nutrition (PN) and standard PN on growth velocity during the transition to enteral feeding in neonates. We are interested in whether standard PN and/or clear fluids maintain the same or similar growth velocity in neonates while transitioning to enteral feeds as does custom PN. Because there is a decreased cost associated with compounding standard PN compared to making custom PN, this interchange has the potential to generate huge health-system savings, especially because minimal volume may be used towards the end of the transition period.

Methods: This is a multicenter retrospective chart-review cohort study that will include approximately 100-150 neonates admitted to the Novant Health Forsyth Medical Center and the Novant Health Presbyterian Medical Center Neonatal Intensive Care Units between August 2015 and July 2016 meeting inclusion criteria.
Inclusion Criteria:
• neonates born and admitted to the Novant Health Forsyth and Presbyterian Medical Center NICUs between August 2015 and July 2016
• received parenteral nutrition between August 2015 and July 2016
Exclusion Criteria:
• short-gut syndrome
• necrotizing enterocolitis
• had surgical procedures or received diuretics or transfusions within the 14 day transition period to enteral nutrition
• have ≤ 1 documented weight during the 7 days before or the 7 days after transition

The following information will be collected on an Excel spreadsheet: gestational age, birthweight, length and head circumference at birth, day of life, gender, hour or life of PN start, daily PN approach used, the day of life PN was discontinued and full enteral feedings began. Recorded weights, along with weekly head circumference and length when available, will be collected starting 7 days before discontinuation of PN and continuing 7 days after discontinuation to calculate the corresponding growth velocity. Z scores will be calculated utilizing the previous data collected. Data will only be collected during the initial PN administration period if the same neonate(s) received multiple PN courses.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-231

Poster Title: Assessing implementation of a new pain, agitation, and delirium protocol in an intensive care unit

Primary Author: Holly Schmidlin, Novant Health Forsyth Medical Center, NC; **Email:** holly.schmidlin@gmail.com

Additional Author (s):
Jeremy Hodges

Purpose: This study will pilot the updated protocol and determine the protocol's effectiveness in reaching provider set goals (i.e. RASS goals, CPOT goals) while maintaining manageability for our nursing staff compared to the previous protocol. The pilot will also identify any gaps in the updated protocol such as, transcription errors, issues with flow, and wording of the protocol.

Methods: This will be a 5 month, single-center, prospective, observational, cross-sectional study with data collection between September 2016-Febuary 2017 on patients who present to the intensive care unit at Forsyth Medical Center with placement on the new PAD protocol. The primary objective of this study is to assess the effectiveness of the new PAD protocol for nursing staff versus the previous protocol. There are several secondary objectives in this study (1) to pilot a new PAD protocol in the intensive care unit and compare manageability versus the previous protocol (2) to assess the adherence to protocol by nursing staff (3) to discover and any gaps in the new protocol to improve before implementation system-wide and (4) fix any gaps in the updated protocol. The primary endpoint of this study will be the effectiveness of the new protocol. Results will be obtained by the attached survey given to nurses. The secondary endpoints will be manageability and adherence of the updated protocol. Descriptive statistics and survey results will be used to assess the objectives of this study.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-232

Poster Title: Impact of pharmacist interventions on increasing the number of patients on appropriate therapy for osteoporosis.

Primary Author: Jennifer McGuirt, Novant Health Forsyth Medical Center, NC; **Email:** jennifer.jones2@novanthealth.org

Additional Author (s):
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Purpose: In 2013, Centers for Medicare and Medicaid Services reported the lowest star rating for osteoporosis measures across all health plans. Novant Health primary care clinics' quality assurance metrics are tracking patients who have been diagnosed with osteoporosis and are not currently receiving pharmacological therapy. The goal for this metric is currently not being met at many of the Novant Health primary care practices. The objective of this study is to determine the number of patients receiving pharmacological therapy for osteoporosis management following pharmacist intervention of chart review and recommendations to providers.

Methods: This is a retrospective study of at least 100 patients who were identified by a Novant Health quality metric report of patients diagnosed with osteoporosis not currently on pharmacological therapy. Patients included in the study will have received a medication review with recommendations for osteoporosis monitoring and therapy routed to their primary care physicians. Data to be collected includes: patient demographics, dates of chart review and recommendations, number of recommendations made for pharmacological therapy, laboratory and bone mineral density testing, and referrals to Novant Health Osteoporosis Clinic. In addition, the study will look at the number of patients on osteoporosis therapy after recommendations were made by the pharmacist along with the drug class and route of those therapies. The primary outcome is the number of patients for whom osteoporosis therapy was initiated following pharmacist recommendation to the primary care provider. Secondary outcome measures are acceptance rate of recommendations to physicians for osteoporosis pharmacological therapy, subdivided into drug class and route of administration,

recommendations for laboratory and bone mineral density testing, and recommendations for referral to Novant Health's Osteoporosis Clinic.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-233

Poster Title: Retrospective evaluation of the management of immune mediated toxicities post immunotherapy in cancer patients across Novant Health

Primary Author: Constance Terrell, Novant Health Forsyth Medical Center, NC; **Email:** constancemterrell@gmail.com

Additional Author (s):
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Purpose: To evaluate the appropriate management of immune mediated adverse events (imAEs) in patients who have received at least one dose of immunotherapy at Novant Health. This project will assess how immune mediated toxicities are being managed at this time and the appropriateness based on treatment recommendations. With more knowledge on which drug, regimen, and dose is most effective as treatment, better outcomes and management of toxicities can be provided to patients.

Methods: Pending approval from the Institutional Review Board (IRB) a retrospective chart review will be completed for patients across all Novant Health facilities who have received at least one dose of immunotherapy from January 1, 2015- July 31, 2016. Data will be collected from the electronic health record based on the time frame noted and patients will be further narrowed based on the inclusion/exclusion criteria. Medical records for eligible subjects will be reviewed retrospectively to collect relevant clinical data related to the imAE and endpoints including: Common Terminology Criteria for Adverse Events (CTCAE) grade/severity of toxicity, time from immunotherapy treatment to toxicity, agent(s) used to manage toxicity, medication dose used to manage toxicity, length of management, side effects of management, time to clinical resolution of toxicity (defined as grade 0-1), single agent immunotherapy vs. combination agent, and reason for discontinuation of immunotherapy. The study will be analyzed using descriptive statistics (percentages and means) to summarize the primary endpoint, secondary endpoints, and baseline characteristics. Once collected, all data will be assessed for missing and nonsensical data. All missing data will be confirmed with the original

data collection forms and corrected in the database if possible. Subjects missing data for primary or secondary outcomes will not be included in the descriptive analysis for that outcome.

Results: N/a

Conclusion: N/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-234

Poster Title: Retrospective review of early onset pneumonia following cardiac arrest: opportunities for antibiotic stewardship

Primary Author: John Kindy, Novant Health Forsyth Medical Center, NC; **Email:** johnkindy@outlook.com

Additional Author (s):
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Purpose: Early onset pneumonia (EOP) is a common complication following cardiac arrest. EOP is often treated as VAP, a complication with high attributable mortality. Studies examining early initiation of antibiotics have shown a decrease in the incidence and duration of pneumonia but not survival or good functional outcome improvement. In contrast, there is a preponderance of data supporting that inappropriate antibiotic use is associated with increased medication costs, antimicrobial resistance, and superinfections. The purpose of this study is to determine the incidence of EOP, treatment strategies currently employed, and microbiological characteristics to allow for development of antimicrobial stewardship guidance.

Methods: This study is currently under IRB review. It is a 24 month retrospective descriptive study of all patients admitted to a tertiary community medical center who meet inclusion criteria for early onset pneumonia (EOP) following out of hospital cardiac arrest (OHCA). Subjects to be screened for inclusion will be identified through a data request for patients admitted with a documented ICD-10 code I46.9/ICD-9 code 427.5 (arrest, cardiac) and/or ICD-10 code I46.2 (arrest due to cardiac condition) and, a length of stay greater than or equal to 7 days. Follow inclusion and exclusion screening, data will be collected through review of electronic medical records. The primary endpoint of this study is the percentage of OHCA patients who develop EOP. Secondary endpoints include characteristics of microbiological samples and antimicrobial therapy, including culture positivity, organisms, empiric therapy, definitive therapy, and timing of interventions. The tertiary endpoint of this study is the patterns of resistance in culture positive subjects. Subject data collected will be tabulated on a standardized spreadsheet. All subjects will be given a unique study identification number for de-identification. Descriptive statistics including percentage prevalence and means with standard deviations will be utilized to analyze nonparametric and parametric data respectively.

This study will comply with all federal, state, and organizational regulations for biomedical research.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-235

Poster Title: Evaluation of the implementation of pharmacist-delivered Medicare annual wellness visits in an internal medicine practice

Primary Author: Markie Webster, Novant Health Forsyth Medical Center, NC; **Email:** leawebster@novanthealth.org

Additional Author (s):
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Purpose: A Medicare annual wellness visit (AWV) is a benefit provided to patients insured under Medicare Part B. The visit evaluates the patient's family and medical history, medication use, and risk factors for certain diseases in order to provide a screening and prevention plan. Currently, AWVs are not completed for all Medicare Part B beneficiaries. This service is one that many patients find beneficial, specifically regarding medication management. Because AWVs may be completed by any healthcare professional under the direct supervision of a physician, pharmacists are able to provide this service along with additional medication guidance and counseling.

Methods: This prospective study will analyze provider interest in pharmacist-delivered Medicare AWVs, number and type of pharmacist interventions made, as well as patient and provider satisfaction with the visits. This study will take place over the course of two years with the first year focused on the development of pharmacist-delivered Medicare AWVs and analysis of outcomes from the initial visits. During the second year, additional visits will be completed by pharmacists and outcomes will be analyzed. Development of the AWVs will initially consist of assessing provider interest through a survey. Upon evaluation of the interest surveys, a practice site will be chosen for implementation of the service. An in-service will be provided at the selected site to educate providers on pharmacist-delivered Medicare AWVs. Patients will then be recruited through letters mailed to the patient's home address and phone calls. Once appointments are scheduled, visits will be completed by pharmacists and the results analyzed. Following completion of the visits, patients will be asked to complete a questionnaire assessing their level of satisfaction with the services provided. Additional surveys will be administered to providers to assess their satisfaction with pharmacist-delivered AWVs. The following outcomes

will be measured upon completion of the visits: number of interventions and type of interventions made by pharmacists, patient satisfaction scores, and provider satisfaction scores.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-236

Poster Title: Implementation of a pharmacist-driven chemotherapy counseling and consenting program in an outpatient community cancer center

Primary Author: Carly Sabat, Novant Health Forsyth Medical Center, NC; **Email:** cmsabat@novanthealth.org

Additional Author (s):
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Purpose: Patients demonstrate benefit when oncology pharmacists are active participants in their clinical care. The value is less defined in a pharmacist-driven chemotherapy counseling program. The purpose of this study is to evaluate the impact on patient outcomes and satisfaction scores in a pharmacist driven chemotherapy counseling and consenting program for intravenous and oral chemotherapy in a community-based oncology clinic.

Methods: This IRB-exempted, retrospective study will evaluate the impact of providing intravenous and oral chemotherapy education to patients treated at Novant Health Oncology Specialist - Forsyth Medical Center. Site-based oncology pharmacists will provide the chemotherapy counseling and consenting of patients. Primary and secondary endpoints include Press Ganey patient satisfaction scores, adherence to regimen (e.g., relative dose intensity), time involved by pharmacist, number and type of interventions made by the pharmacy team, and number of unscheduled admissions due to side effects. Descriptive statistics will be used to assess the impact of this program versus the previous standard program.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 10-237

Poster Title: Comparison of fentanyl and remifentanil on peri-operative medication administration and costs

Primary Author: Heather Taylor, Novant Health Forsyth Medical Center, NC; **Email:** hitaylor@novanthealth.org

Additional Author (s):
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Purpose: Remifentanil is a synthetic mu-opioid receptor agonist with a unique pharmacokinetic profile. It's rapid onset of action, short context-sensitive half-life, and organ independent metabolism and elimination may prove advantageous for certain surgical procedures. Currently no direct comparison of overall medication usage between fentanyl and remifentanil when used for craniotomy exists. Remifentanil may offer a potential cost savings by reducing amounts of peri-operative medications to be administered. This study will assess differences in medication usage between fentanyl and remifentanil when used for craniotomy sedation and analgesia to determine if a cost savings may be appreciated.

Methods: Following IRB approval a Trendstar report of adult patients who were admitted to Novant Health Forsyth Medical Center or Presbyterian Medical Center between September 1, 2015 and November 30, 2016, who received a continuous infusion of either remifentanil or fentanyl for craniotomy sedation and analgesia will be generated. Subjects who were pregnant, transferred to or from another facility prior to discharge, or experienced an acute life threatening event while in surgery will be excluded. The electronic medical record (EMR) of up to 200 subjects who meet the inclusion and exclusion criteria will be reviewed, and relevant, pre-specified data points will be collected using a standardized data collection form (DCF). DCFs will be assessed for clarity and completeness periodically, and validation queries will be run to ensure accurate data capture and entry. All data will be collected without patient identifiers and maintained confidentially. Outcome measures include amounts of peri-operative medications administered, drug cost per case, intraoperative blood pressure range, post-anesthesia care unit length of stay, and time to extubation. Analysis of the primary and secondary endpoints will be done using descriptive statistics, ratio t-test, and regression analysis. Three subset analyses will also be preformed on subjects who have renal impairment,

are obese, or have a greater risk of post operative nausea and vomiting. Subjects missing data will not be included in the primary analysis.

Results: n/a

Conclusion: n/a

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-238

Poster Title: Implementation of a pharmacist-led transitional care protocol for patients post-percutaneous coronary intervention

Primary Author: Lauren Hickman, Novant Health Population Health Pharmacy, NC; **Email:** ldhickman@novanthealth.org

Additional Author (s):
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Purpose: The American College of Cardiology's CathPCI Registry assesses the characteristics, treatments, and outcomes of patients who receive percutaneous coronary intervention (PCI) procedures. Prescription of aspirin, P2Y12 inhibitors, and statins at discharge has demonstrated reduction in morbidity and mortality in several studies of patients post-PCI. The CathPCI Registry's medication metric measures proportion of patients with aspirin, P2Y12 inhibitor and statins prescribed at discharge. This study will characterize and evaluate the effect of pharmacy interventions on medication discharge practices for patients post-PCI at Novant Health Presbyterian Medical Center (NHPMC) in an effort to improve compliance with the CathPCI Registry's medication metrics.

Methods: This quasi-experimental, historically-controlled, comparative study has been submitted to the Institutional Review Board for approval. All patients receiving a PCI over the course of a three-month period at NHPMC will be identified using a report generated from Novant Health's electronic health record. Patient demographics and clinical variables will be assessed by pharmacists and pharmacy technicians, with an emphasis on assuring patients are discharged on the three medications included in the CathPCI Registry medication metric. If a discrepancy is noted by a pharmacy technician, the patient's chart will be forwarded to the pharmacist for review. If a true discrepancy is present the pharmacist will contact the patient and/or the provider for medication review and reconciliation. The primary endpoint will be number of pharmacy interventions. Secondary endpoints include types of pharmacy interventions, acceptance of pharmacy interventions, proportion of patients prescribed aspirin, P2Y12 inhibitor, and statin at discharge, proportion of patients prescribed beta blockers, ACEi/ARBs, and aldosterone antagonists at discharge, after visit summary and discharge

summary medication discrepancies, and readmission rates. The proportion of patients discharged on the medications included in CathPCI registry metric, will be compared to a historical control. To examine for differences between the control and intervention groups, Student's t-test will be used to compare continuous variables and a chi-square test will be used to compare categorical variables.

Results: Pending.

Conclusion: Pending.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-239

Poster Title: Routine vitamin K-1 for erratic international normalized ratio stabilization

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Additional Author (s):
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Purpose: Patients are at increased risk for major bleeding and thromboembolic events when the international normalized ratio (INR) is outside the therapeutic range. The objective of this study is to determine whether daily low-dose vitamin K-1 (phytonadione) intake will stabilize erratic INRs.

Methods: Qualifying patients will be started on daily vitamin K-1 supplementation and followed over a period of three months. The primary endpoint is change in time in therapeutic range (TTR), which will be evaluated by a comparison between TTR from the three months prior to vitamin K-1 initiation and TTR from the three months of vitamin K-1 supplementation. Patients will be included if they have erratic INRs defined as a three month TTR of less than or equal to 50 percent after at least four INR results. An informed consent form will be discussed in full with each patient before they agree to participate. This study has been submitted to the Institutional Review Board for approval. Patients will be provided with OTC Vitamin K-1 100mcg and instructed to start supplementation following the initial appointment. A one week follow-up visit will be scheduled to make any necessary adjustments to the warfarin dose. The three month study period will begin at the appointment succeeding the one week follow-up visit. The following data will be collected: age, sex, race/ethnicity, dates of anticoagulation appointments and associated INR results, patient reported signs and symptoms of bleeding or thromboembolic events, diagnostic test results utilized to detect thromboembolism, and three month time in therapeutic range as calculated by the Rosendaal method.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-240

Poster Title: Evaluation of amiodarone use for the prevention of postoperative atrial fibrillation in cardiac surgery

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Additional Author (s):
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Susan Tharp

Purpose: The most common arrhythmia that occurs after cardiac surgery is atrial fibrillation. In patients undergoing coronary artery bypass grafting (CABG) the incidence of postoperative atrial fibrillation varies, but has been reported as high as forty percent. The purpose of this study is to assess whether the use of amiodarone prophylactically decreases the incidence of postoperative atrial fibrillation in CABG patients at Novant Health Presbyterian Medical Center in Charlotte, North Carolina.

Methods: The electronic medical record system will be used to identify CABG surgeries for this retrospective chart review. The following patients will be excluded: patients with atrial fibrillation or any abnormal heart rhythm other than sinus rhythm prior to surgery, those with concomitant valve surgery, and those who had received treatment with amiodarone within 3 months of surgery. Recommended dosing for the optional amiodarone regimen for prevention of postoperative atrial fibrillation is as follows, amiodarone is started postoperative day one at 400 mg twice daily with decrease to 200 mg daily on postoperative day six. If no postoperative atrial fibrillation occurs the amiodarone is to be stopped at discharge; however, if the patient has atrial fibrillation postoperatively then the amiodarone should be continued for one month. The primary endpoint is to assess the incidence of atrial fibrillation, defined as any episode of atrial fibrillation lasting longer than one hour and/or requiring treatment, post CABG surgery. The following data will be collected: gender, age, arrhythmia history, incidence of postoperative atrial fibrillation, use of amiodarone, any moderate or severe drug interactions, any adverse events that occurred, need for a permanent pacemaker, readmission to the hospital within 30

days of discharge, all-cause mortality within 30 days of discharge, and common labs such as heart rate, liver function tests, QTc, and thyroid function tests.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-241

Poster Title: Nimodipine compliance in aneurysmal subarachnoid hemorrhage – pharmacists' role in comprehensive stroke survey preparation

Primary Author: Chelsea Wampole, Novant Health Presbyterian Medical Center, NC; **Email:** cwampole11@gmail.com

Additional Author (s):
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Catherine Salvador

Purpose: Novant Health Presbyterian Medical Center (NHPMC) is preparing for The Joint Commission survey to become a comprehensive stroke center. One of The Joint Commission's quality measures is nimodipine initiation within 24 hours of hospital admission for aneurysmal subarachnoid hemorrhage. The objective of this study is to determine if pharmacist education and involvement can have an impact on the compliance rate with this measure.

Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical record will identify patients admitted for aneurysmal subarachnoid hemorrhage based on ICD-10 code. The following data points will be collected: age, gender, time of arrival, time to computerized tomography (CT) scan from time of arrival to hospital, bleed type identified by CT scan, type of aneurysm, time to nimodipine initiation, nimodipine treatment duration, hospital length of stay, neuroscience intensive care unit (ICU) length of stay, presence of clinical cerebral vasospasm by assessment, transcranial Doppler (TCD) velocities, severity of TCD velocities, interventions by neurosurgery, destination/disposition upon discharge and adverse events related to nimodipine. All data will be de-identified and stored on a password-protected computer. Pharmacists will be educated on the quality measure involving nimodipine and will be asked to look for initiation when verifying orders as part of the subarachnoid hemorrhage order set. Clinical pharmacy specialists will follow-up to make sure nimodipine is started appropriately or document rationale if it was not started. Compliance rates will be compared between pre- and post-pharmacist education groups to determine its effectiveness on the quality measure.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-242

Poster Title: Evaluation of antithrombotic reversal in trauma patients admitted with acute major bleeding

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Catherine Salvador

Purpose: Uncontrolled post-traumatic bleeding is the leading cause of death among trauma patients. Because many patients may be on an antithrombotic agent, it is imperative to understand how to properly reverse an antithrombotic in the setting of major bleeding following trauma. The primary purpose of this retrospective analysis is to assess the appropriateness of treatment with the correct reversal agent for antithrombotic medications by evaluating the time to reversal administration and physician adherence to anticoagulant reversal protocols as a composite endpoint.

Methods: Pending IRB approval, the system trauma report will identify patients admitted with a traumatic mechanism experiencing major bleeding based on Advanced Trauma Life Support (ATLS) criteria. The electronic patient chart will then be used to identify patients on oral anticoagulants and antiplatelet agents who received one of the following reversal agents: 4-factor prothrombin complex concentrate, Vitamin K, fresh frozen plasma, recombinant factor VIIa, idarucizumab, tranexamic acid, or platelet transfusion. Patients who receive andexanet in coming months will also be included if data is available. The following data will be collected: age, gender, weight, facility, home anticoagulant or antiplatelet regimen, reversal agent administered with route and dose, INR, anti Xa, thrombin, hemoglobin, hematocrit, platelets, major bleeding class as defined by the ATLS criteria, use of order set, recorded pharmacist interventions involving reversal agent choice, length of stay, and adverse events. Data will be recorded without patient identifiers and be maintained in a password protected file on hospital computers secured within the pharmacy department. Data will be analyzed by descriptive statistics to determine the composite endpoint of appropriateness of treatment based on reversal agent choice, time to reversal agent administration, and physician compliance with

protocols. Length of stay, adverse effects, and effect of pharmacist interventions will also be evaluated as secondary endpoints utilizing descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-243

Poster Title: Assessment of safety and efficacy of apixaban and rivaroxaban in patients with end stage renal disease

Primary Author: Luc Trinh, Novant Health Presbyterian Medical Center, NC; **Email:** ltrinh@novanthealth.org

Additional Author (s):
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Jeannie Poon

Purpose: Evaluate the incidence of thromboembolic events for hemodialysis patients taking either rivaroxaban or abixaban as compared to warfarin.

Methods: Pending IRB approval, this study will be a multi-centered, retrospective chart review comparing the clinical outcomes of hemodialysis patients on either rivaroxaban or apixaban to the same patient population on warfarin. Patients will be matched one to one based on age, weight, and indication for anticoagulation. Patient charts from Novant Health Presbyterian Medical Center, Mathews Medical Center, and Huntersville Medical Center will be reviewed for indications of anticoagulation, thromboembolic events, bleeding events including lab values of CBC, PT, and INR, as well as transfusion requirements. Results will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-244

Poster Title: Determining the weight-based efficacy of giving single flat rasburicase doses to prevent tumor lysis syndrome

Primary Author: Brian Fisette, Novant Health Presbyterian Medical Center, NC; **Email:** brfisette@novanthealth.org

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Purpose: Tumor lysis syndrome (TLS) is an oncologic emergency occurring in certain types of cancer, including leukemia, lymphoma, and solid tumors. Rasburicase is a urate-lowering agent indicated for hyperuricemia due to malignancy expected to result in TLS. Although a weight-based dosing scheme has been FDA-approved, evidence exists to support flat single doses to reduce uric acid (UA) levels. However, little evidence exists supporting this dosing scheme in the obese population. The primary purpose of this study is to determine if flat single doses of rasburicase are effective in preventing TLS in all patients, regardless of their body mass index (BMI).

Methods: This retrospective chart review will evaluate patients who have received rasburicase for the prevention of TLS. Patients included in this study are 18 years or older with a malignancy diagnosis, having received at least one dose of rasburicase for the prevention of TLS. Patients will be excluded if a baseline UA level is unavailable, if they have a history of hemolytic, hypersensitivity, or methemoglobinemia reactions to rasburicase, or if they were on renal replacement therapy at baseline. The primary outcome of this study is the rate of rasburicase failure, characterized by the development of TLS, stratified by BMI. Secondary outcomes will examine the rate of rasburicase failure with regards to TLS risk level, UA level, and also the rate of hemodialysis initiation and additional doses of rasburicase administered for treatment of TLS.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-245

Poster Title: Clinical efficacy of metronidazole twelve-hour dosing regimens in patients with anaerobic or mixed anaerobic infections

Primary Author: Ashley Soule, Novant Health Presbyterian Medical Center, NC; **Email:** afsoule@novanthealth.org

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Purpose: Metronidazole is often used to empirically treat anaerobic and mixed anaerobic infections of the oral and intestinal spaces. Traditional metronidazole dosing recommendations utilize an every 8-hour dosing strategy; however, based on pharmacokinetic studies, Novant Health adopted a 12-hour metronidazole dosing regimen for all anerobic infections except for C. difficile, central nervous system, or parasitic/amoebic infections. Although there is pharmacokinetic evidence to support this regimen, literature evaluating clinical outcomes is limited. The purpose of this study is to evaluate the frequency of clinical cure among patients receiving metronidazole every 12 hours compared with those who received an every 8 hour frequency.

Methods: This is a retrospective, single-center, pre-post intervention study. Subjects will be identified using a report from the electronic medical record of all adult patients who received at least 72 hours of metronidazole for a presumed anaerobic or mixed anaerobic infection from June 2014 through July 2016. Exclusion criteria include metronidazole use for surgical prophylaxis, receipt of an antibiotic with anaerobic coverage for >24 hours prior to metronidazole, receipt of a concurrent antibiotic with anaerobic coverage, causative organism non-susceptible to empiric antibiotics, and pregnancy. Patients will be matched 1:1 based on metronidazole dosing frequency (every 12 hours versus every 8 hours) and the following criteria: age, gender, BMI, infection type, and which floor the patient was admitted to (general medicine vs. intensive care unit). Clinical cure will be defined as improvement or resolution of the principle sign/symptom of infection with normalization of white blood cells (WBC > 4,000 or < 12,000) and temperature (>96.8 F or < 100.4 F). Secondary endpoints include duration of antibiotics, hospital length of stay, escalation of antibiotic therapy, microbiologic cure, mortality

rates, and cost savings. The data will be presented using both descriptive and inferential statistics. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-246

Poster Title: Impact of dose-capping on time to therapeutic anticoagulation by anti-Xa levels for weight-based unfractionated heparin

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Additional Author (s):
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Oksana Barakat
Jane Green
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Purpose: The American College of Cardiology/American Heart Association guidelines recommend weight-adjusted unfractionated heparin (UFH) bolus of 60 Units per kg (maximum 4,000 Units) and initial infusion of 12 Units per kg per hour (maximum 1,000 Units per hour) for treatment of acute coronary syndromes. The impact of these dose maximums on rapid and effective anticoagulation remains unclear. The purpose of this study is to evaluate whether a standardized weight-based dose cap for patients weighing greater than 83.3 kg receiving low-intensity UFH infusions, as defined by the protocol at UNC REX Healthcare, results in a longer time to obtain therapeutic anti-Xa levels.

Methods: This retrospective, observational, single-center study at UNC REX Heathcare will compare anticoagulation parameters and outcomes in study patients greater than 83.3 kg versus a comparison group less than or equal to 83.3 kg. Data will be collected from the electronic medical record for patients at least 18 years of age receiving low-intensity UFH between June 20, 2014 and September 6, 2016 for at least 24 hours. Patients that will be excluded are those that receive heparin infusion without bolus, lack documented baseline complete blood count, receive concomitant treatment with a fibrinolytic or glycoprotein IIb/IIIa inhibitor, receive factor Xa inhibitors without appropriate wash-out period, and documented allergy, contraindication, or intolerance to UFH, including history of heparin-induced thrombocytopenia. The primary endpoint will be percentage of first anti-Xa levels within the goal range (0.31-0.6 U/mL). Secondary endpoints will include mean time required to obtain a first therapeutic anti-Xa level (0.31-0.6 U/mL), mean infusion rate per kilogram of total body weight required to obtain a first therapeutic anti-Xa level, and percentage of cumulative anti-Xa

levels within subtherapeutic (≤0.30), therapeutic (0.31-0.6), and supratherapeutic (>0.6) ranges. Safety and efficacy will be assessed by recording bleeding episodes and recurrent thrombotic events.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-247

Poster Title: Evaluation of oral chemotherapy monitoring at an outpatient oncology clinic

Primary Author: Shelby Ammirati, Southeastern Health**,** NC; **Email:** srammirati@gmail.com

Additional Author (s):
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Purpose: The National Comprehensive Cancer Network (NCCN) guidelines recommend periodic monitoring with oral chemotherapy; however, they do not have specific recommendations for monitoring appropriate laboratory tests. Gibson Cancer Center, an affiliate of Southeastern Health, recommends that laboratory monitoring be completed within seven days of ordering or refilling oral chemotherapy. Currently, there is no process in place to ensure this laboratory monitoring is occurring. Adherence to laboratory parameter monitoring at Gibson Cancer Center should be assessed to evaluate the need for implementation of oral chemotherapy care-plans.

Methods: A retrospective chart review will be conducted to determine the compliance rate of laboratory monitoring with oral chemotherapy at Gibson Cancer Center. The electronic medical record system will be used to identify patients who received at least one dose of oral chemotherapy between June 1, 2015 and June 30, 2016. Administration orders, laboratory results, and provider notes within the electronic medical record system will be used to collect data on patients receiving oral chemotherapy within the targeted time frame. Data collected will include patient demographic information, type of oral chemotherapy ordered, provider, other concurrent chemotherapy, and complete blood count and chemistry panel resulting up to 7 days prior to oral chemotherapy prescriptions.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-248

Poster Title: Vancomycin and fidaxomicin use for initial Clostridium difficile infection in a community hospital

Primary Author: Brandy Pauff, Southeastern Regional Medical Center, NC; **Email:** pauff01@srmc.org

Additional Author (s):
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Purpose: Oral vancomycin and fidaxomicin are antibiotics used for the treatment of Clostridium difficile infection (CDI). Per the literature, both agents are more effective than metronidazole at preventing CDI recurrence. Southeastern Regional Medical Center (SRMC) is a member of the Duke Antimicrobial Stewardship Outreach Network (DASON) which noted that SRMC's fidaxomicin use is higher than other member hospitals, while its oral vancomycin consumption is lower than other hospitals in the network. Since fidaxomicin therapy is more costly, a review was conducted to evaluate appropriate use of these antibiotics at SRMC, and to compare patient outcomes associated with receiving these agents.

Methods: A retrospective chart review was conducted for patients that received oral vancomycin and fidaxomicin therapy between January 1, 2015 and June 30, 2016. Data collected includes CDI episode number, 30 day recurrence, duration of therapy, positive CDI culture, other CDI therapy, risk factors and death. Patients will be excluded if they test negative for CDI or do not receive a dose of the prescribed agent. Patients who fail oral vancomycin therapy prior to receiving fidaxomicin will be evaluated as a subgroup of the fidaxomicin arm. Descriptive statistics will be used to evaluate outcomes in each group, which will include all-cause and CDI-related mortality, 30 day CDI recurrence, and colectomy or GI surgery as a result of CDI.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-249

Poster Title: Use of the North Carolina Controlled Substance Reporting System and its impact on opioid prescribing in a community hospital emergency department

Primary Author: Hunter Ingoe, Southeastern Regional Medical Center, NC; **Email:** ingoe01@srmc.org

Additional Author (s):

Purpose: Opioid abuse in the United States is a national epidemic with strong ties to prescription medications. The objective of this study is to introduce methods for use of the North Carolina Controlled Substance Reporting System to aid providers in appropriate opioid prescribing in the emergency department at Southeastern Regional Medical Center.

Methods: This study will be submitted to the Institutional Review Board for approval. With use of the emergency department narcotic prescribing report, retrospective data will be collected on prescribing of opioids upon discharge for non-specific pain diagnoses in the emergency department at Southeastern Regional Medical Center. Patient data will be compiled from this list and will be checked within the North Carolina Controlled Substance Reporting System to determine if patients possess a history of chronic opioid use. Data will also be collected on prescribing patterns of each provider and compared to the group of emergency services providers at the institution. Correlation between history of chronic opioid use and opioid prescriptions received from the emergency department will be made with the goal of identifying opportunities for intervention using the North Carolina Controlled Substance Reporting System.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-250

Poster Title: Retrospective analysis of the effectiveness of accelerated dose versus standard dose sotalol initiation in patients with atrial fibrillation or atrial flutter

Primary Author: John Toler, UNC REX Healthcare, NC; **Email:** john.toler@unchealth.unc.edu

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Purpose: Sotalol initiation may be performed using two different dosing regimens: an accelerated dose initiation regimen utilizing higher than the maximum initial dose or standard dose initiation according to manufacturer recommendations. Comparative literature between the two initiation regimens has focused on safety and hospital length of stay but there is a lack of evidence regarding antiarrhythmic effectiveness. The purpose of this study is to determine if an accelerated dose sotalol initiation of 120mg or 160mg twice daily is associated with differences in antiarrhythmic effectiveness, safety, or length of stay when compared with a standard sotalol initiation of 80mg twice daily.

Methods: This project will be a single-center, retrospective evaluation of the effectiveness of an accelerated dosing initiation of sotalol 120mg or 160mg twice daily or a standard initiation of 80mg twice daily. Data will be collected via electronic medical record and sotalol monitoring record review. All patients receiving sotalol initiation for atrial fibrillation or atrial flutter at UNC REX Healthcare between 8/1/2014 and 8/1/2016 will be included. Excluded patients will be those treated for ventricular arrhythmias, contraindications to sotalol, creatinine clearance less than 40 mL/min, less than 18 years of age, cardiogenic shock, pregnancy, converting from class I or class III antiarrhythmic agents without adequate washout, and missing follow-up documentation within one month after discharge. A random sample of approximately 100 subjects will be used for each arm of the analysis. All clinic, emergency department, telephone, and inpatient encounters in the 30 days post-hospital discharge from the inpatient sotalol initiation will be reviewed. The primary endpoint will be the number of patients with a documented recurrence of atrial fibrillation or atrial flutter in each group within 30 days post-

hospital discharge. Secondary endpoints will include a comparison between groups of the discontinuation rates due to adverse events, the length of hospitalization for the sotalol load, and the proportion of patients requiring direct current cardioversion during sotalol initiation.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-251

Poster Title: Evaluation of guideline-concordant empiric vancomycin use in the treatment of febrile neutropenia due to chemotherapeutic agents

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Additional Author (s):
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Purpose: Vancomycin use has increased dramatically in recent years and studies suggest that inappropriate prescribing has contributed to the rise of multi-drug resistant organisms such as vancomycin-resistant enterococcus. The current National Comprehensive Cancer Network and Infectious Diseases Society of America clinical guidelines for the treatment of febrile neutropenia stress the importance of limiting vancomycin use to certain clinical scenarios. We will evaluate the current prescribing practices at a community hospital to determine the rate of inappropriate vancomycin prescribing in patients with febrile neutropenia, compare clinical endpoints, and explore potential future stewardship opportunities to limit inappropriate vancomycin use in febrile neutropenia.

Methods: This study is a retrospective electronic medical record review of patients with febrile neutropenia due to chemotherapeutic agents who have received vancomycin as a part of empiric antimicrobial therapy. For the primary outcome of rate of guideline-concordant empiric vancomycin use, all patients meeting inclusion criteria will be screened by electronic medical record review for documentation of the National Comprehensive Cancer Network and Infectious Diseases Society of America guidelines criteria. These criteria include: suspected intravenous catheter infection, skin or soft-tissue infection, pneumonia, hemodynamic instability, severe penicillin allergy, colonization with penicillin or cephalosporin-resistant pneumococci or methicillin-resistant Staphylococcus aureus, or blood cultures positive for gram-positive organism. Patients who have documentation of at least one of the criteria will be considered guideline-concordant with respect to vancomycin use, and those patients who did not have any of the specified criteria will be considered guideline-discordant. The guideline-

concordant group will then be compared to the guideline-discordant group for the secondary outcomes of rate of adverse events related to vancomycin use, hospital length of stay, rate of discontinuation of vancomycin at 48 hours after initiation for those patients whose cultures have remained negative for gram positive organisms. The results of the study will be used to determine the need for antimicrobial stewardship efforts to reduce inappropriate vancomycin use in febrile neutropenia patients.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-252

Poster Title: Assessment of the effect of target specific oral anticoagulants for acute treatment of venous thromboembolism in patients with cancer

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Additional Author (s):
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Purpose: The 2014 American Society of Clinical Oncology (ASCO) practice guidelines update recommend low molecular weight heparin (LMWH) for treatment and secondary prophylaxis of venous thromboembolism (VTE) in oncology patients. When LMWH is not ideal, vitamin K antagonists are an acceptable alternative. Use of target specific oral anticoagulants (TSOACs) is not currently recommended in oncology patients because of limited of data; however, prescribing of TSOACs (apixaban, dabigatran, edoxaban, and rivaroxaban) in this patient population is increasing in clinical practice. The purpose of this study is to evaluate the recurrence of VTE in oncology patients receiving TSOACs compared to those receiving LMWH.

Methods: This study is a retrospective cohort study conducted at multiple sites (hospital and physician clinics) within a single healthcare system. It has been submitted to the Institutional Review Board for approval. Patients included in the study are greater than or equal to 18 years old, have a diagnosis of cancer that confers high risk of VTE, have a diagnosis of deep vein thrombosis (DVT) or pulmonary embolism (PE), and are taking a TSOAC or LMWH. Patients are excluded if they are less than 18 years old, taking warfarin, are pregnant, or currently incarcerated. Patients will be identified using reports generated by the electronic medical record. Data on demographics, occurrence of DVT and PE, and bleeding will be collected using the same reports. Additional data regarding the clinical course will be collected, if necessary, via retrospective chart review. The primary endpoint will be rate of DVT and PE recurrence in the included patients while taking a TSOAC or LMWH. The secondary endpoint will be rate of major bleed defined as: a bleeding event causing a decrease in hemoglobin of 2 g per deciliter or

more; any bleeding event requiring transfusion of 2 or more units of blood; any bleeding event occurring in a critical site (intracranial, intraspinal, intraocular, retroperitoneal, or pericardial area); or any bleeding event contributing to patient death.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-253

Poster Title: Use of proton pump inhibitors and association with Clostridium difficile infection at an academic medical center

Primary Author: Lauren Bode, University of North Carolina Hospitals and Clinics, NC; **Email:** lauren.bode@unchealth.unc.edu

Additional Author (s):
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Purpose: This academic medical center currently reports higher Clostridium difficile (C. diff) rates than its UHC counterparts and has begun to implement measures to decrease the incidence of documented C. diff infections by 10% by June 2017. The use of proton pump inhibitors (PPI) is a known risk factor for the development of C. diff, which is particularly problematic due to wide spread use of PPIs in both the inpatient and outpatient settings. This project seeks to describe current PPI use in an attempt to evaluate the efficacy of future interventions in decreasing inappropriate PPI prescribing.

Methods: This analysis is a retrospective chart review of 120 patients who were prescribed a PPI while admitted between March 2015 and February 2016. Ten patients will be selected for inclusion by identifying patients prescribed a PPI via the institutional electronic health record. Stratified sampling techniques according to admission date will be used to include 5 patients whose PPI use is a continuation of a home medication and 5 for whom the PPI is started initially as an inpatient each calendar month of the study period. Indications for PPI use will be evaluated based on age, sex, past medical history, current hospital problems, and inpatient medications. Other data collected will include the PPI dosing regimen and duration of use, the ordering provider, and the provider's service. Outcomes measures to be assessed are proportion of appropriate indications for PPI use, appropriate discontinuation of PPI on discharge, and positive tests for C. diff at any point during admission.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-254

Poster Title: Evaluation of clindamycin at a large community health system

Primary Author: Nichoals Patricia, WakeMed Health & Hospitals, NC; **Email:** npatricia@wakemed.org

Additional Author (s):
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Purpose: Clindamycin is recommended in several guidelines including: surgical prophylaxis, skin and soft tissue infections (SSTI), and MRSA treatment guidelines. Meta-analysis completed in inpatient populations reported that clindamycin carries one of the highest risks for Clostridium difficile infections (CDI) compared to other antibiotic agents. The purpose of the study is to evaluate clindamycin prescribing practices and utilization at a large community hospital. Based on the results, the goal is to identify potential initiatives to optimize clindamycin usage and reduce the risk for hospital acquired-CDI.

Methods: This institutional review board has approved this retrospective, single-center study. Any adult inpatients who received at least one dose of clindamycin during February and March 2016 in the health system will be included. Patients who are less than 18 years of age, pregnant, or admitted for less than 24hrs will be excluded. Trends in clindamycin prescribing and potential areas for optimization will be determined. Data to be collected: patient demographics (age, sex, weight, penicillin or cephalosporin allergy), indication for clindamycin use (if utilized for surgical prophylaxis: surgical procedure, surgeon; if utilized for skin and soft tissue: type of SSTI, if culture collected, culture results, clindamycin sensitivity), clindamycin prescriber, location at time of clindamycin initiation, days of clindamycin therapy, presence of ID consult at initial order or during treatment course, and CDI (history of CDI, CDI documented within 90 days after exposure). All data will be recorded using a secure, HIPAA compliant, electronic data collection tool and confidentiality will be maintained.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-255

Poster Title: Evaluation of albumin usage at a large community health system

Primary Author: Caitlin Akerman, WakeMed Health & Hospitals, NC; **Email:** cakerman@wakemed.org

Additional Author (s):
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Purpose: Albumin is a colloid solution used to treat a myriad of conditions, including hypovolemia and shock, as well as displaced fluid caused by large volume paracentesis. Because albumin is an endogenous blood product and is difficult to manufacture, the drug is prone to both high-cost and shortage. The purpose of this study is to quantify how albumin is being prescribed at a large community health system by reviewing the indications, doses, and providers who utilize this medicine.

Methods: This IRB-approved, retrospective, medication-use evaluation includes all inpatients 18 years and older who are not pregnant. A report run in the electronic medical record system identified all patients who received at least one dose of albumin between January 1, 2016 and March 31, 2016. The following data is being collected from the patient's medical chart: demographic data (patient age, gender, admission date, discharge date, and length of stay), dose, route, and frequency of albumin, as well as indication for use of albumin, number of liters of fluid removed (if paracentesis is the indication), total dosage of albumin received, and provider name/specialty. All data is being recorded without patient identifiers and maintained confidentially. The most common indications and providers, as well as the amount of albumin administered, will be evaluated to determine if albumin is being utilized appropriately within the health system. Based on the results, the goal is to identify potential initiatives to optimize the usage of albumin at a large community hospital.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-256

Poster Title: Assessment of high dose gentamicin 7 mg/kg for open fracture prophylaxis in trauma patients

Primary Author: Cristina Kaifer, WakeMed Health & Hospitals, NC; **Email:** ckaifer@wakemed.org

Additional Author (s):
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Purpose: Gentamicin is the most studied antibiotic for gram negative coverage following open fracture in trauma patients. Dosing schemes include conventional and high dose extended interval (HDEI). Advantages of HDEI include improved concentration-dependent killing, increased post-antibiotic effect, decreased risk of toxicity and adaptive resistance. Studies have evaluated 5-6 mg/kg once-daily compared to conventional dosing for prophylaxis and demonstrated once-daily regimens are safe and effective. Our institution administers 7 mg/kg once-daily, which has not been previously studied. The objective of this study is to evaluate the safety and efficacy of 7 mg/kg once-daily for open fracture prophylaxis in trauma patients.

Methods: This is a single-center, retrospective cohort study approved by the Institutional Review Board. Patients will be included if they are greater than 18 years of age with lower extremity open fractures, as identified through our institution's trauma registry, who were admitted from May 2012 to May 2013, prior to implementation of high dose gentamicin for open fracture prophylaxis (conventional group), and from January 2015 to December 2015, after implementation of high dose gentamicin for open fracture prophylaxis (high dose group). The primary endpoint is acute kidney injury, defined as an increase in serum creatinine of ≥0.5 mg/dL or 50% from baseline, whichever is greater for two consecutive days after initiation of gentamicin until 48 hours after completion of therapy. Secondary endpoints will include surgical site infections, defined by the presence of positive microbiologic cultures during the index hospitalization, or during any subsequent admission to our health system within 90 days of the index hospitalization. Additional data to be collected includes: age, weight, body mass index (BMI), comorbidities, concomitant antibiotics, type of fracture, intensive care unit (ICU)

length of stay (LOS), hospital LOS, surgical procedures, and gentamicin levels (if collected for therapy >4 days).

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-257

Poster Title: Characterization and evaluation of bivalirudin and unfractionated heparin use in primary percutaneous coronary intervention at a large community hospital

Primary Author: Eric Sparks, WakeMed Health & Hospitals, NC; **Email:** rsparks@wakemed.org

Additional Author (s):
Janna Beavers

Purpose: Unfractionated heparin and bivalirudin are recommended as options for anticoagulation in ST-elevation and non-ST-elevation myocardial infarction patients undergoing percutaneous coronary intervention. Older trials suggested that bivalirudin had similar efficacy with reduced bleeding risk when compared to heparin. However, recently published studies demonstrated similar bleeding risks with the two agents. The optimal agent has not yet been identified however it is possible that heparin would be a cost-effective alternative in certain patients. We aim to characterize patients undergoing primary PCI at a large community hospital who received unfractionated heparin and bivalirudin to evaluate bleeding risk and to assess clinical outcomes.

Methods: This study will be a single center chart, retrospective cohort with approval by institutional review board. Patients will be included if they are 18 years or older, underwent cardiac catheterization, and received bivalirudin or unfractionated heparin during primary PCI between January 1, 2016 and March 31, 2016. The primary endpoint is the bleeding risk, based on NCDR scoring, for patients who received bivalirudin or unfractionated heparin during PCI. The secondary endpoints are the percentage of patients in bivalirudin and unfractionated heparin groups with a major or minor bleeding event during hospitalization and at 30 days; the percentage of patients in bivalirudin and unfractionated heparin groups with cerebrovascular accident, myocardial infarction, reinfarction, or stent thrombosis during hospitalization and at 30 days. Additional data to be collected will include: age, gender, weight, serum creatinine, hemodialysis status, past medical history, presence of ST-elevation on electrocardiogram, presence of shock, elective vs emergent nature of procedure, cardiac arrest event within 24 hours of PCI, anticoagulant dose, anticoagulant bolus use, post-procedure anticoagulant administration, anticoagulant duration, concomitant medications, procedure access site, and

type of intervention performed. All data will be recorded using a secure, HIPAA compliant, data collection tool.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-258

Poster Title: Utilizing Indian Health Service counseling techniques in an independent community pharmacy to improve adherence rates among patients with diabetes, hypertension or hyperlipidemia

Primary Author: Natasha Colvin, Wingate University School of Pharmacy, NC; **Email:** n.colvin@wingate.edu

Additional Author (s):
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Purpose: The purpose of this study is to utilize Indian Health Service (IHS) interactive counseling techniques and the Morisky Medication Adherence Scale (MMAS-8) to measure nonadherence and identify barriers. Taking medications correctly and not missing doses may lower the risk of having a heart attack, stroke, blindness, loss an arm/leg or kidney failure. It can also decrease emergency room visits and hospitalizations.

Methods: Subjects are current patients at an independent community pharmacy located in southeastern North Carolina and taking medication(s) for high blood pressure, diabetes, and/or high cholesterol. A master list will be obtained from PrescribeWellness, a password protected site only available to the store's pharmacists. The master list will assign a random research ID number to each patient. To help protect patient's confidentiality, only the first three letters of their last name, first two letters of their first name and research ID number (ie John Doe would be "DOEJO#") will be combined to create a code, which will be documented in research records. The code will be used as a reference back to the master list. Each month, research subjects will be telephoned and asked to answer questions about their medications such as what medication(s) they are taking, how they are taking them, what they are taking them for and any missed doses. On the first encounter, subjects may be asked questions about your age, sex, race, type of insurance, years of education and medical conditions (diabetes, high blood pressure and high cholesterol) as they are not listed in their pharmacy profile and will help

describe the study's patient population. The subject's doctor will be contacted if the pharmacist feels the patient is at risk for any harm based on the information provided.

Results: In-progress

Conclusion: In-progress
At the end of the study, data will be analyzed to show the impact of counseling techniques on adherence rates.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-259

Poster Title: Appropriate use of haloperidol for delirium prevention in a community hospital

Primary Author: Kay-Lee Allen, Concord Hospital, NH; **Email:** kmallen@crhc.org

Additional Author (s):
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John Jezak

Purpose: The American Psychiatric Association recognizes that delirium can occur in 10-30% of all medically ill persons and is associated with a significant increase in morbidity, mortality, and length of hospitalization. Haloperidol is often prescribed prophylactically to prevent delirium; however it is not without risks, including QT interval prolongation, and extrapyramidal side effects. The objective of this study is to evaluate the appropriate use of haloperidol in a delirium prevention protocol and identify areas for provider education if necessary.

Methods: This study was submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients admitted to the hospital who had haloperidol ordered via the delirium prevention protocol from June 1, 2016 through August 31, 2016. The following patient-specific data will be identified: hospital identification number, age, and gender. Additionally, the dose, frequency, and quantity of haloperidol received, along with length of hospital stay will be collected. Provider and nurse documentation will be reviewed to determine if a corrected QT (QTc) interval was obtained, the timing of administration of haloperidol relative to the QTc interval, presence of contraindications for haloperidol use, and administration of haloperidol with disease state interactions. All data will be documented without patient identifiers and maintained confidentially. Data will be reviewed and analyzed to determine if haloperidol was ordered and monitored appropriately. Education to the healthcare team will be provided if areas requiring improvement are identified.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-260

Poster Title: Evaluation of sugammadex usage in a community hospital operating room

Primary Author: Daniel Sullivan, Concord Hospital, NH; **Email:** daniel2sullivan@gmail.com

Additional Author (s):
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John Jezak

Purpose: Sugammadex and neostigmine are indicated for the reversal of the effects of the non-depolarizing neuromuscular blocking agents (NMBA) rocuronium and vecuronium in patients undergoing surgery. Sugammadex reverses the effects of these agents more rapidly than neostigmine but is also considerably more expensive. Our hospital has been using significantly more sugammadex than originally expected when it was added to formulary. The objective of this drug use evaluation is to determine the rate of usage of sugammadex since being added to formulary and to evaluate if further restrictions are needed.

Methods: This drug use evaluation will be submitted to the Institutional Review Board (IRB) for approval. The medical record will be used to identify patients who have received sugammadex or neostigmine from June 15, 2016 through August 31, 2016. All patients will be de-identified and information will be maintained confidentially. Patient age, gender, weight, admit time to post-anesthesia care unit (PACU), allergy to neostigmine, creatinine clearance, NMBA given, time NMBA given, dose of NMBA given, NMBA reversal agent given, time NMBA reversal agent given, dose of NMBA reversal agent, and cost of reversal agent will be collected. Factors that would influence the decision to give an NMBA reversal agent and comorbidities that would affect the choice of NMBA reversal agent will be collected if obtainable. The time from NMBA reversal agent administration to PACU admission and time from NMBA administration to NMBA reversal agent administration will be calculated. Data will be reviewed and analyzed to determine the rate of usage of sugammadex since being added to formulary and to evaluate if further restrictions are needed.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-261

Poster Title: Evaluation of the current prescribing practices of fluoroquinolone antibiotics for urinary tract infections at a tertiary academic medical center

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Michael Calderwood

Purpose: Fluoroquinolone antibiotics are associated with disabling and potentially permanent side effects of the tendons, muscles, joints, nerves, and central nervous system in otherwise healthy patients. Due to this risk, the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration (FDA) recently recommended limiting the use of fluoroquinolones in acute, non-complicated infections by reserving them for patients with no other treatment options since the benefits do not outweigh the risks. The primary objective of this review is to evaluate prescribing patterns of fluoroquinolones for urinary tract infections at a tertiary academic medical center following new CDC recommendations.

Methods: This is a retrospective chart review of patients diagnosed with a urinary tract infection and treated with a fluoroquinolone antibiotic after the CDC released its new recommendations in March of 2016. Patients meeting this criteria between the dates of April 1, 2016 and September 15, 2016 were reviewed. They were identified using the medical center's surveillance software program and were excluded from analysis if they were less than 18 years of age or were treated with a fluoroquinolone for less than 48 hours. Outcomes evaluated include the appropriateness of drug selection determined by allergy information, renal function, severity of infection, and documented urinary resistance within the past 6 months. Use of a fluoroquinolone in a patient with an uncomplicated urinary tract infection is defined as appropriate when a contraindication or allergy exists towards all other first-line options including nitrofurantoin, sulfamethoxazole/trimethoprim, fosfomycin, and cephalexin. Results

and conclusions are pending the completion of data collection. This study was approved for exemption by the medical center's Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-262

Poster Title: Evaluation of pharmacist-driven vancomycin dosing and monitoring protocol

Primary Author: Anna Espeland, Elliot Health System, NH; **Email:** aespeland@elliot-hs.org

Additional Author (s):
Jamie Godin

Purpose: Vancomycin, a widely used intravenous antibiotic, has a narrow therapeutic range that puts patients at risk for toxicities (specifically nephrotoxicity and ototoxicity) and/or development of antibiotic resistance and subsequent treatment failure. The objective of this study is to determine the utilization of our institution's pharmacist-driven vancomycin dosing protocol, areas for improvement within the protocol and risk factors specifically obesity and renal function of patients resulting in non-therapeutic vancomycin levels.

Methods: This study is submitted to the Institutional Review Board for approval. The electronic medical record system will identify adult patients, admitted January 2016 through March 2016, who have had at least one vancomycin trough level for their admission. The following data will be collected: vancomycin dose, frequency, and duration; vancomycin trough concentrations and timing; indication for use and goal trough desired; renal function markers (serum creatinine, creatinine clearance and urine output); use of other nephrotoxic medications; culture identification and susceptibilities; when and if antibiotic coverage was narrowed; patient demographics (age and weight); and total length of stay. All data will be recorded without patient identifiers and maintained confidentially. Using specific institutional trends such as how often desired troughs were achieved and which patients had evidence of renal toxicity, data will be analyzed for quality improvement measures. These measures could include but are not limited to: identifying patients that should receive loading doses, dosing for obese patients, dose adjustment for patients with unstable renal function, dose adjustments for patients not within desired goal range, and trough monitoring optimization of current vancomycin dosing.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-263

Poster Title: Evaluation of medication reconciliations at hospital discharge

Primary Author: Candace Chin, Elliot Health System, NH; **Email:** cchin@elliot-hs.org

Additional Author (s):
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Purpose: Patients are often discharged with medications that have undergone multiple changes during their lengths of stay in hospitals. Changes may include unintentional addition or deletion of medications, adjustment of doses, or duplication of therapies. These discrepancies may lead to adverse effects after discharge and therefore hospital readmissions. Medication reconciliation is the process of reviewing medication profiles and addressing inconsistencies during transitions of care. The purpose of this study is to evaluate the accuracy of discharge medication reconciliations for inpatients transferring to Northeast Rehabilitation within the hospital.

Methods: This retrospective study has been submitted for approval by the Institutional Review Board. A report generated from the electronic medical record will identify all adult patients discharged on at least one prescription or over-the-counter medication to Northeast Rehabilitation from the hospital between July 1st, 2015 and June 30th, 2016. The following data will be collected: number of patients participating in the process, type and number of medication discrepancies encountered (incorrect medications, medication omissions, medication duplications, dosing errors, drug interactions), number of discrepancies involving high-risk medications (anticoagulants, antibiotics, cardiovascular, neurological), number of incomplete prior to admission medication reconciliation lists, and thirty-day hospital readmission rates. All data will be recorded without patient identifiers and maintained confidentially. The data will be analyzed to identify any opportunities for improvement in the medication reconciliation discharge process. Such opportunities may include increasing patient education on their medications upon discharge and creating a process to clarify the status of medications patients take prior to admission. Additionally, results may support the need for multidisciplinary involvement with pharmacists included in the process by having them conduct medication reconciliations upon discharge and create medication lists for patients.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-264

Poster Title: A review of a phenobarbital protocol used for acute alcohol withdrawal syndrome in a hospital setting

Primary Author: Ryan Fabrycki, Elliot Health System, NH; **Email:** rfabrycki@elliot-hs.org

Additional Author (s):
Peter Hughes

Purpose: Acute alcohol withdrawal syndrome is typically managed with benzodiazepines. However, some patients may present with symptoms that are refractory, even to large doses of benzodiazepines. Phenobarbital has been used as an alternative in the treatment of acute alcohol withdrawal syndrome. The objective of this study is to review the utilization of our institution's phenobarbital protocol and identify areas for improvement.

Methods: This retrospective study has been submitted to the institutional review board for approval. Patients will be identified through the electronic medical record system that were admitted to the hospital and placed on the phenobarbital protocol during the time period of 7/1/2015 to 6/30/2016. The data collected will include number of patients treated, loading doses given, maintenance doses given, CIWA scores (initially, at 24 hours, at 48 hours and at 72 hours), patients discharged on the protocol, patients that completed the protocol, and hospital length of stay. All data will be recorded without patient identifiers and maintained confidentiality. Data obtained from this study will be reviewed to implement any necessary changes to the protocol including but not limited to: increased loading dosing, reduction in duration of therapy and cost savings due to shorter length of stay.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-265

Poster Title: Impact of pharmacy students on patient utilization of a hospital provided discharge medication service

Primary Author: Sarah Simpson, Wentworth Douglass Hospital, NH; **Email:** sarah.simpson@wdhospital.com

Additional Author (s):
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Purpose: Studies indicate that a significant number of medication-related hospital admissions are due to poor medication management. Pharmacists can improve patient adherence and ensure proper medication use by providing counseling services and access to medications at the time of discharge. The purpose of this project is to incorporate pharmacy students to streamline and promote the utilization of the discharge medication service at Wentworth-Douglass Hospital.

Methods: This study will be reviewed by the Institutional Review Board (IRB) for approval prior to initiation. The design will be a retrospective review that will evaluate the number of eligible patients utilizing the discharge medication service. A formalized assessment tool will be used to compare the number of patients using the medication discharge service prior to and after the incorporation of pharmacy students. Baseline utilization data will be measured in a 3 month period prior to the pharmacy student intervention and will be compared to a 3 month period post pharmacy student implementation. Two pharmacy students will be used to identify eligible patients and offer the medication discharge service. Inclusion criteria: patients on medical floors, patients being discharged to home, patients being discharged during outpatient pharmacy hours, and patients with prescriptions. Exclusion criteria: patients being discharged to another facility, patients who have out of network insurance coverage, or patients being discharged outside of outpatient pharmacy hours. The primary endpoint will compare the number of patients utilizing the discharge medication service prior to and after incorporating

pharmacy students. The secondary endpoints will compare hospital readmission rates and examine the direct and indirect financial impact of this service.

Results: In progress

Conclusion: In progress

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-266

Poster Title: Evaluation of Use of Rapid Sequence Intubation Agents and Place in Therapy for Sugammadex in the Emergency Department

Primary Author: Christina Aldrich, Avera McKennan, SD; **Email:** christina.aldrich@avera.org

Additional Author (s):
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Purpose: Recent literature has found shorter recovery time with the use of rocuronium-sugammadex compared to succinylcholine for rapid sequence intubation (RSI) in surgical patients. With recent approval of sugammadex, there is potential for increased use of rocuronium for RSI in the emergency department.
The primary objective of this study is to evaluate the appropriate selection of neuromuscular blockade for RSI in the emergency department before and after implementation of an algorithm for selection of neuromuscular blockers (NMBA). The secondary objectives are to evaluate the number of failed intubation attempts and determine a place in therapy for sugammadex in the emergency department.

Methods: A retrospective drug utilization review will be performed to analyze the use of NMBAs for RSI in the emergency department from April 1st – July 31st 2016. A report will be generated through the Avera McKennan quality review department to identify patients who received RSI according to preset inclusion criteria. In September 2016, an algorithm will be implemented to guide providers to appropriate NMBA selection. Retrospective chart review will be completed post-implementation from October 1st – December 31st, 2016 to determine if there is a difference in appropriate agent selection before and after implementation. Appropriate use of NMBA agents will be defined according to clinical contraindications. Succinylcholine is contraindicated in patients with a history of myasthenia gravis or malignant hyperthermia, family history of malignant hyperthermia, end stage renal disease, hyperkalemia, denervation injuries, 24—48 hours post crush or burn injuries, and penetrating eye injuries. For these patients, rocuronium should be selected as the agent of choice. However, if there is a lack of clinical contraindications, succinylcholine should be selected. Chart review will be performed

to collect the following data: age, sex, general medical or trauma patient, Level 1 or Level 2 trauma, agent/dose used, physician, contraindication to succinylcholine, number of intubation attempts, failed intubation. A subgroup analysis will be performed for trauma patients who received RSI in the emergency department.

Results: Pending IRB approval and data collection

Conclusion: To be determined

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-267

Poster Title: Warfarin reversal for intracranial hemorrhage at an academic medical center

Primary Author: Alicia Christensen, Avera McKennan Hospital & University Health Center, SD; **Email:** alicia.christensen@avera.org

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Purpose: Patients with anticoagulant-associated intracranial hemorrhages have increased morbidity and mortality due to larger hemorrhage volumes, hematoma expansion, and increased comorbidities. Reversal of anticoagulation is paramount in the initial management of these patients to attempt to limit hematoma expansion and improve morbidity and mortality. The purpose of this study is to describe how warfarin-associated intracranial hemorrhages are currently being managed at Avera McKennan Hospital & University Health Center, specifically comparing the institution's adherence to guideline recommendations newly published by the Neurocritical Care Society/Society of Critical Care Medicine and the American Heart Association/American Stroke Association.

Methods: This retrospective, observational study will be approved by the institutional review board prior to data collection. The study period will occur from April 30, 2013 to May 31, 2016, and will evaluate patients admitted to Avera McKennan Hospital with a warfarin-associated intracranial hemorrhage. Patients will be selected for review based on discharge ICD9 and ICD10 diagnosis codes. Protected populations and patients initiated on comfort care measures within 48 hours of hospital admission will be excluded from the analysis. Primary endpoints points that will be evaluated include administration of guideline-recommended doses of vitamin K and 4-factor PCC and that the recommended INR monitoring is obtained. Secondary endpoints will examine rates of hematoma expansion, size of hematoma expansion, thrombotic events, mortality, blood pressure and blood glucose excursions, and use of mechanical and pharmacologic VTE prophylaxis. Results will be used to improve care of these patients at the institution and generate hypotheses for further study.

Results: Data collection in process.

Conclusion: To be determined.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-268

Poster Title: Probability of target attainment with broad-spectrum beta-lactam antibiotics against key gram-negative bacteria among inpatients at an academic medical center

Primary Author: Ashley Eckert, Avera McKennan Hospital & University Health Center, SD;
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Purpose: Increasing resistance among gram-negative bacteria and the varying dosing regimens for beta-lactam antibiotics with activity against these bacteria can create uncertainty in choosing an appropriate antibiotic and dosing regimen. The purpose of this study is to determine the minimum inhibitory concentration (MIC) distribution among key gram-negative bacteria at an academic health center and evaluate the adequacy of beta-lactam antibiotic dosing regimens against these bacteria.

Methods: The institutional review board has approved this retrospective, observational study. Infection surveillance software will be used to identify isolates of Escherichia coli, Pseudomonas, Enterobacter and Klebsiella collected in the institution from January 1, 2016 to December 31, 2016. Minimum inhibitory concentration data for cefepime, piperacillin-tazobactam and meropenem will be collected by manual chart review using the electronic medical record. The date of collection and source of the culture will also be recorded for each bacterial isolate identified. All isolates collected from inpatients at the institution during the study period will be included with the exception that exact duplicates will be excluded. Isolates from the same patient and source collected on separate days of the same admission will be included but will be numbered in the order of collection to allow analysis of data for all isolates as well as for first isolates separately. All collected data will be de-identified and maintained in a confidential manner. The collected data will be pooled to determine the overall MIC distribution at the institution for each bacteria. Existing Monte Carlo simulation data will be used to determine the probability of achieving drug concentrations above the MIC for an adequate percentage of time during treatment using each dosing strategy against each studied bacteria.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-269

Poster Title: Evaluation of appropriate monitoring and toxicity management of programmed cell death-1 receptor and program cell death-1 ligand inhibitor therapy in an oncology clinic

Primary Author: Christine McNamara, Avera McKennan Hospital & University Health Center, SD; **Email:** christy.mcnamara@gmail.com

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Purpose: Nivolumab, pembrolizumab, and atezolizumab are oncology agents that affect T-cell regulation. The activation of T-cells can potentially cause life threatening immune-related adverse effects (irAE). The package inserts of these medications specifically outline treatment recommendations based on the severity of the reaction, commonly suggesting the use of corticosteroids and withholding treatment. Monitoring for irAEs and clinician awareness of their unique treatment is important due to the unpredictability and seriousness of irAE. This study will assess the appropriate monitoring, incidence and subsequent treatment of irAEs in an ambulatory oncology clinic.

Methods: This study is a single-center, retrospective chart review of patients receiving programmed cell death-1 receptor (PD-1) or programmed cell death-1 ligand (PD-L1) inhibitor therapy, including nivolumab, pembrolizumab or atezolizumab in an ambulatory oncology clinic. Patients will be identified by chart review and data will be collected through the electronic medical record systems of the hospital and oncology clinic between September 1, 2014 and January 31, 2017. The primary objective will quantify the incidence of appropriate monitoring for immune related adverse effects (irAE) based on the recommendations according to the medication package insert and order sets of the cancer institute which are the standard of care based on physician board approval. Data collection for this objective will include labs, physical exams, and provider notes.
Secondary objectives will quantify the incidence of irAEs and evaluate the subsequent treatment. Treatment of irAE will be evaluated according to package insert recommendations. Assessment of therapeutic response to drugs will also be collected and analyzed through

medical chart review and will include provider notes and imaging. This study has been approved by an IRB.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-270

Poster Title: Evaluating and comparing the risk and implications of serotonin norepinephrine re-uptake inhibitors versus selective serotonin re-uptake inhibitors in patients with congestive heart failure

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Purpose: One antidepressant drug class, serotoinin norepinephrine reuptake inhibitors (SNRIs), has been noted by the American Psychiatric Association as appearing to be safe in those with heart diseases, like congestive heart failure (CHF); however, based on the pathophysiological processes associated with the development of CHF and considering SNRIs sympathetic nervous stimulation, SNRIs may be associated with CHF exacerbation. The purpose of this study is to compare the safety and risks associated with using SNRIs versus selective serotonin re-uptake inhibitors (SSRIs) in CHF.

Methods: This study has been approved by the Institutional Review Board. It is a retrospective cohort study utilizing electronic medical records to identify patients who were admitted from January 1, 2010 to September 1, 2016. Inclusion criteria includes those 18 years or older, diagnosed with systolic or diastolic CHF (identified by ICD-9 and ICD-10 codes), and are prescribed to either a SSRI or SNRI. Exclusion criteria includes those who are prescribed to a tricyclic antidepressant, prior or current chemotherapy with an anthracycline agent, no available echocardiogram or left ventricle ejection fraction (LVEF), and pregnant or breastfeeding. The following pertinent information will be obtained: Age, gender, race, body weight, type of heart failure (HF), date of diagnosis, LVEF, systolic and diastolic blood pressure, heart rate, major medical history, SSRI or SNRI medication, dose and start date, echocardiogram, New York Heart Association (NYHA) Functional Classification, medications indicated in the management of CHF and acute decompensated heart failure (ADHF) including

medications used for symptomatic relief, BNP (brain natriuretic peptide) and NT-proBNP (N-terminal pro-brain natriuretic peptide), and doses of diuretics. Reviewers will compare SSRI and SNRI all-cause hospitalizations, hospitalizations due to heart failure, and incidence rates of newly diagnosed CHF. Reviewers will also analyze the aforementioned based on a predefined subgroup analysis comparing HF with reduced ejection fraction (EF) versus HF with preserved EF.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-271

Poster Title: Retrospective review of data to compare the effects of various continuous sedation methods on hemodynamics, sedation level, recovery period, and complications in pediatric patients

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Additional Author (s):
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Purpose: Pediatric sedation necessitates a systematic approach that requires a clear understanding of appropriate medication usage. Also, physicians and other medical staff should know how to consistently treat patients. Two primary pediatric physicians within Avera McKennan have differing preferred continuous sedation methods. As pharmacists, we wanted to compare the effects of the various continuous sedation methods on hemodynamics, sedation level, recovery period, and complications in the pediatric patients. The overall outcome of the study will hopefully improve clinical outcomes for pediatric patients requiring continuous sedation. Also, this study will potentially standardize a pediatric sedation method and improve nursing satisfaction.

Methods: This study will be submitted to the Institutional Review Board for approval. This retrospective study will have data collection take place from August 1, 2015 to December 31, 2016, with plans to perform analysis during January 2017. All data will be recorded without patient identifiers and will maintain confidentially. The following parameters for sedated pediatric patients less than or equal to 18 years of age, receiving either dexmedetomidine or midazolam continuous infusions will be compared: heart rate, blood pressure, respiratory rate, and peripheral oxygen saturation. Sedation level, ventilator days, ICU days, recovery time, and ease of management for nursing will also be collected through number of nursing interventions, boluses given, bags exchanged, and syringes exchanged. Research is needed to optimize best practice within the Avera McKennan health institution and to have a consistent protocol for all professional staff to follow.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-272

Poster Title: Comparison of mTOR inhibitor associated stomatitis rates in oncology patients initiated on everolimus with and without use of prophylactic steroid-based mouthwash: A case-control study

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Purpose: Stomatitis is one of the hallmark adverse events occurring in patients initiated on mTOR inhibitors, with an incidence rate estimated at sixty-seven percent. Patients experience discomfort or pain, which may escalate to inadequate nutrition or hydration, leading to dose reduction or treatment discontinuation. Recent literature has shown that it may be possible to prevent mTOR inhibitor associated stomatitis with the use of prophylactic steroid-based mouthwash. The objective of this study is to assess the risk of stomatitis in patients that receive a prophylactic mouthwash during the first 12 weeks of treatment versus those who do not.

Methods: This study has been approved by the Institutional Review Board. This study will be a retrospective, case-control analysis of patients over 18 years of age initiated on everolimus therapy between June 2014 and June 2016 at a regional cancer center. Through utilization of the electronic medical record system, cases will be identified as those patients who developed mTOR inhibitor associated stomatitis within 12 weeks of everolimus initiation. These cases will be matched on the basis of age, sex, body mass index, and cancer indication to controls that did not develop stomatitis. Patients will be excluded if stomatitis was present at time of everolimus initiation, chronic treatment with systemic steroids, indication for everolimus other than cancer, or indication of subependymal giant cell astrocytoma. Primary exposure of interest will be receipt of compounded prophylactic mouthwash. Other data to be collected include cancer stage, receipt of previous chemotherapy, treatment regimen, comorbidities, adverse event descriptions, and prescription fill data. Assuming an odds ratio of 4 as clinically significant, and power of 80 percent, we estimate a sample size of 59 cases per group or a total of 118 patients. Multiple logistic regression and descriptive analysis will be conducted.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-273

Poster Title: Evaluation of the accuracy of low molecular weight heparin-calibrated anti Xa levels as a surrogate marker to measure rivaroxaban and apixaban activity

Primary Author: Mindy Hanten, Avera McKennan Hospital and University Health Center, SD; **Email:** melinda.hanten@avera.org

Additional Author (s):
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Purpose: Rivaroxaban and apixaban concentrations can be accurately and rapidly obtained using a chromogenic antifactor Xa assay with specific drug calibrator material. However, the only rivaroxaban and apixaban calibrators that are available are approved for research use only. The objective of this study is to explore the relationship and determine the accuracy of using low molecular weight heparin-calibrated anti Xa levels as a surrogate measure of direct oral factor Xa inhibitor activity in samples from subjects taking rivaroxaban or apixaban for the treatment of venous thromboembolism (VTE) or non-valvular atrial fibrillation.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients receiving apixaban or rivaroxaban upon admission for the treatment of venous thromboembolism or non-valvular atrial fibrillation. The following data will be collected: patient age, gender, current direct oral factor Xa inhibitor and dose, low molecular weight heparin-calibrated anti Xa level, and direct oral anticoagulant-calibrated anti Xa level. The electronic medical record system will also identify any recorded history of renal or hepatic insufficiency. An interview to assess the degree of medication adherence will be conducted between the investigator and the patient. All data will be recorded without patient identifiers and maintained confidentially. The results of the direct oral anticoagulant-calibrated anti Xa level and low molecular weight heparin-calibrated anti Xa level will be statistically analyzed to determine if a correlation exists between the two levels. The reviewers will evaluate the utility of the low molecular weight heparin-calibrated anti Xa level as a surrogate marker for measuring apixaban and rivaroxaban activity.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-274

Poster Title: Evaluation of the optimal time zero regarding antibiotic administration in severe sepsis/septic shock patients presenting to the emergency department

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Purpose: The optimal time zero (T0) regarding antibiotic administration in severe sepsis/septic shock patients in the emergency department (ED) remains uncertain. The Surviving Sepsis Campaign guidelines use T0 as the time of triage in the ED, differing from the Centers for Medicare and Medicaid Services Sepsis Core Measure which uses earliest chart documentation of severe sepsis/septic shock. This study aims to evaluate patient outcomes when antibiotics are administered within three hours of a positive severe sepsis/septic shock screen, within three hours of ED presentation, or outside both three hour windows to assist in determining the most beneficial T0 for antibiotic administration.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients presenting to the emergency department from October 1st, 2015 through September 30th, 2016 will be retrospectively reviewed for positive severe sepsis/septic shock screens and grouped based on time of antibiotic administration. Data collected will include the following: time of ED presentation, time of positive severe sepsis/septic shock screen (vitals and systemic inflammatory response syndrome (SIRS) criteria), time of antibiotic administration, likely source of infection, duration of hospital stay, inpatient mortality, intensive care unit (ICU) admission, vasopressor and steroid use, comorbidities, and general demographic data. All data collected will be maintained confidentially and will not be associated with patient identifiers. Patients overlapping into both three hour windows of antibiotic administration following presentation to the ED and a positive severe sepsis/septic shock screen will be evaluated as part of the ED presentation group. This subset of patients will also be analyzed separately. The primary endpoint of this study will be inpatient mortality differences among the three comparator

groups. Secondary endpoints will include duration of hospital stay, ICU admissions within 48 hours, and vasopressor and steroid use.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-275

Poster Title: Evaluating the use of appropriate anticoagulation with lenalidomide and pomalidomide in patients with multiple myeloma

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Purpose: As the number of patients receiving novel therapies for multiple myeloma increases and these patients survive their disease longer, the opportunity for complications arises. Lenalidomide and pomalidomide are two immunomodulatory medications with the potential to improve overall survival for these patients; however, a black box warning for venous thromboembolism (VTE) exists. Therefore, the need for quality assurance with prophylactic anticoagulation guidelines is essential. The purpose of this study is to assess overall adherence to guideline recommendations for anticoagulation therapy with lenalidomide and pomalidomide in multiple myeloma patients.

Methods: This retrospective study has received institutional review board approval. The study will analyze patients diagnosed with multiple myeloma and treated with lenalidomide or pomalidomide. It will focus on those who received care at an ambulatory oncology clinic between the calendar years 2013 through 2015. Patients will be identified from lists generated through the associated specialty pharmacy and REMS. Chart reviews will be utilized to collect pertinent patient data. The primary endpoint of the study is prescription of appropriate anticoagulation upon initiation of therapy based on a list of pre-determined risk factors. These risk factors include: obesity, prior VTE, central venous access device or pacemaker, associated disease (cardiac disease, chronic renal disease, diabetes, acute infection, immobilization), surgery (general surgery, anesthesia, trauma), erythropoietin use, blood clotting disorders, hyperviscosity, multi-agent chemotherapy and/or doxorubicin, and high-dose dexamethasone. Secondary endpoints include incidence of deep venous thrombosis, pulmonary embolism,

myocardial infarction, stroke, and major bleeding; initial anticoagulant prescribed; and whether or not anticoagulation was currently prescribed for another disease state.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-276

Poster Title: Evaluating the impact on seizure duration of holding, dose reducing, or continuing anticonvulsant medications prior to electroconvulsive therapy

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Purpose: ECT and scheduled anticonvulsants have individually been shown as safe, effective treatment options for a wide range of psychiatric conditions. A correlation exists between ECT seizure duration and clinical outcomes. However, little research has been conducted regarding the effects of scheduled anticonvulsants on ECT seizure duration. Anticonvulsants potentially interfere with therapeutic seizure precipitation, which could decrease ECT effectiveness. The current ECT order set at the study institution does not address scheduled anticonvulsants prior to ECT. This study aims to detect a difference in seizure duration between patients who had anticonvulsants held, dose reduced, or continued at original dose.

Methods: This study has been approved by the Institutional Review Board. A drug search will be performed in the electronic medical record to identify patients prescribed glycopyrrolate, a standard pre-medication for ECT at the study institution. Subjects will be included if they were inpatients 18 years and older, admitted 1 January 2012 to 31 August 2016, received ECT, and received scheduled anticonvulsants. Patients will be excluded if they have a reported pregnancy or positive pregnancy test, or were administered benzodiazepines in the 12 hours prior to ECT. Information collected for each patient will include admission and discharge date; age; sex; length of inpatient stay; ECT indication; anticonvulsant dose, schedule, and indication; anticonvulsant drug levels; and whether scheduled anticonvulsant medications were held, dose decreased, or continued prior to each ECT session. For each ECT session, the following will be collected: ECT number and date; electrode placement; charge; motor seizure duration; electroencephalogram (EEG) seizure duration; administered pre-medications and their dose; and presence or absence of induction medications, and their dose. Seizure duration will be

compared between patients who had scheduled anticonvulsants held, dose reduced, or continued prior to ECT therapy.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-277

Poster Title: Implementation of a pharmacy protocol for intravenous (IV) to oral (PO) conversion between unlike antibiotics in the hospital setting.

Primary Author: Charles Morrison, Rapid City Regional Hospital, SD; **Email:** cmorrison2@regionalhealth.com

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Purpose: Antibiotic IV to PO conversion protocols have become common practice among hospital institutions. These conversions reduce complications, cost of care, and length of hospital stay. Misconceptions have led to unwillingness to switch patients to oral therapy in a timely manner. Current institutional policy only allows for IV to PO conversion of the same antibiotic. Literature has established that other antibiotics could be converted from the IV form to a therapeutically equivalent PO form. This project will help identify proper exchanges for intravenous agents that do not have an oral dosage form in order to expand an existing antimicrobial conversion protocol.

Methods: This study is pending Institutional Review Board approval. This prospective study will evaluate patients 18 years and older on intravenous ceftriaxone, ampicillin/sulbactam, and cefazolin for conversion therapy eligibility. Evaluation will occur three times weekly for a period of 3 months. If the patient meets criteria for conversion, the provider will be contacted and a suggestion will be made to convert to an oral therapeutically equivalent antibiotic. During the study period, the following data will be collected: age, gender, weight, BMI, indication for antibiotics, IV antibiotic and dose, result of recommendation, PO antibiotic and dose, culture source, identified bacteria, IV, PO and total antibiotic days, length of stay, 30-day readmission, readmission diagnosis, and 30-day reinfection. The electronic medical record and monitoring systems will be used for data collection.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-278

Poster Title: Empiric vancomycin use in community-acquired pneumonia in hospitalized Native American patients

Primary Author: Jessica Rounds, Rapid City Regional Hospital, SD; **Email:** jrounds2@regionalhealth.com

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Purpose: The prevalence of methicillin resistant staphylococcus aureus (MRSA) in community-acquired pneumonia is not fully identified. A recent study suggested the prevalence is roughly 0.7 percent. This study also found 30 percent of patients are treated empirically with anti-MRSA antibiotics. Currently no studies specifically show the prevalence of MRSA community-acquired pneumonia in the Native American population. The purpose of this project is to evaluate empiric antibiotics and the prevalence of MRSA community-acquired pneumonia the Native American population.

Methods: A retrospective, electronic medical chart review of patients hospitalized with community-acquired pneumonia. This study is pending institutional review board approval. Patients will be identified with International Statistical Classification of Diseases (ICD 10) code from October 1st, 2015 to October 1st, 2016. Patients 18 years or older with evidence of community acquired pneumonia will be included. Exclusion criteria are patients who are immunosuppressed or have a history of MRSA. Data collection will include admission date, intensive care unit or medical floor admission, age, gender, race, comorbidities (diabetes, alcoholism, and chronic obstructive pulmonary disease), smoking history, temperature, respiratory requirements, white blood cell counts, lactic acid on the first day of antibiotics, microbiology results, sputum culture quality, serology results, empiric antibiotics started, and CURB-65 scores.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-279

Poster Title: Improved patient care with pharmacist-directed interventions in the emergency department of a community hospital.

Primary Author: Amber Yaeger, Rapid City Regional Hospital, SD; **Email:** ayaeger@regionalhealth.com

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Purpose: Nationwide, emergency departments are known to have the highest rate of medication errors in a hospital facility. This study will quantify the interventions made with a pharmacist present in the emergency department during high volume times. Secondarily, a comparison of the emergency department's perception of a pharmacist in the emergency department before and after a pharmacist has been available to make interventions for improved patient care will be evaluated. The site-specific information within a community hospital, with no current pharmacist coverage of the emergency department, will guide the future of an emergency department-based pharmacist position.

Methods: This study is pending Institutional Review Board approval. The prospective study will be conducted at a level II trauma center equipped with a 28-bed emergency department, providing care for adult and pediatric patients of Rapid City, South Dakota and surrounding communities. The primary objective will identify the quantity of cumulative interventions posed by a pharmacist while present in the emergency department. Secondary outcomes include the changes in perception of a pharmacist's presence in the emergency department pre- and post-study period, the change in medication error rate, the associated cost savings of interventions, and the acceptance rate of the interventions suggested. The primary investigator will be available in the emergency department during high volume hours to make real-time interventions to all patients with intended medication administration in the emergency department. For the purpose of this study, orders from an admitting physician will be excluded from analysis. Recommendations will primarily be conducted verbally and occasionally written when unable to locate the physician. Each identified intervention will get recorded in an Excel spreadsheet according to the designated intervention subcategory. The emergency department

staff will complete a short survey to identify the baseline perception of pharmacist presence in the emergency department before the trial begins. The Likert-ranked survey will be repeated at the end of the study period for comparison to baseline.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-280

Poster Title: Comparison of pharmacist-led versus nurse-led discharge medication education on 30-day readmission rates in patients diagnosed with acute myocardial infarction

Primary Author: Matthew Slagle, Confluence Health Central Washington Hospital, WA; **Email:** matthew.slagle@confluencehealth.org

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Purpose: In 2013, the Agency for Healthcare Research and Quality reported acute myocardial infarction (AMI) as the fifth most costly condition to our healthcare system. Central Washington Hospital's current overall 30-day readmission rates are lower than the national average, whereas 30-day readmission rates for AMI were found to be no different. Various studies have found reductions in 30-day readmission rates when pharmacists have an active role in the discharge process. This study will observe whether pharmacist-led medication counseling results in a reduction of 30-day readmission rate in patients with AMI, as standard discharge practice at Central Washington Hospital currently omits pharmacist.

Methods: This study is pending approval from the Washington State University Institutional Review Board. Recruitment for this study will occur for all patients with an AMI meeting study inclusion, upon admission to Progressive Care Unit. Once informed consent has been obtained, patients will be randomized in a five to three fashion to receive discharge medication counseling from a pharmacist or from a nurse, the standard practice at Central Washington Hospital. In the event a pharmacist cannot counsel an assigned patient, that patient will be moved to the nursing cohort for the remainder of the study. A review of the patient's profile will be conducted to determine AMI risk factors and cardiac medications prior to admission. At the time of discharge, the pharmacist or nurse will complete a standardized form to record time spent discussing medications, and various accepted medication interventions. Patient identifiers will be removed and this information will be inputted into a Microsoft Excel spreadsheet. With the provided phone number, patients will be contacted 31-days post-discharge to determine hospital readmission or emergency department visit in the previous 30-

days. Patients will be asked a standardized questionnaire regarding their discharge counseling experience. The study is expected to last three months.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-281

Poster Title: Clinical pharmacists have the prescription to fix your emergency department: Implementation of an emergency department pharmacist

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Purpose: The American Society of Health-System Pharmacists (ASHP) and Fairbanks et al, have shown that up to 78 percent of medication related adverse events can be prevented by utilization of an ED pharmacist. As of 2003, only about 3 percent of hospitals had clinical pharmacists assigned to the emergency department (ED). This disparity is detrimental to patient safety. The primary aim of this study is to assess the impact of an ED pharmacist, and demonstrate that benefit exists in placing a pharmacist directly in the ED. Secondary aims are to gauge opinions, barriers, and financial constraints that exist for placement.

Methods: This study will seek Institutional Review Board approval from Washington State University. A clinical pharmacist will perform a 6-8 week trial in the ED which will include: review of patient charts, and identifying and making necessary changes as authorized by hospital protocols or providers. The pharmacist will record the following: type and number of interventions, time needed for intervention resolution, and what day and time the interventions took place. Interventions will be categorized as: medication error (wrong drug, dose, or dosage form), administration error, untreated indication, medication without indication, pharmacokinetic consult, cost avoidance, code response, or missing patient information. All data will be tabulated within Excel and a dollar value will be associated with each intervention to determine ED pharmacist impact. The pharmacist will be unblinded to the intervention data collection as it would not otherwise be feasible. Surveys will be distributed to ED staff in order to evaluate their opinion of clinical pharmacists prior to placement within the ED, and after.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Descriptive Report

Session-Board Number: 10-282

Poster Title: Collecting meaningful outcomes in oncology patients: Preliminary analysis of factors and challenges affecting the initiation and completion of chemotherapy in an integrated delivery system

Primary Author: Tiffany Nguyen, Group Health Cooperative, WA; **Email:** nguyen.tiffany@ghc.org

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Purpose: Proactively capturing real world clinical outcomes for patients being treated with oral oncology agents is a challenging task, especially outside of clinical trials. The authors are unaware of any comprehensive databases characterizing patient-centered outcomes for cancer therapy: clinical efficacy and tolerability. Thus, a data collection system was created inside of Group Health's (GH) Electronic Medical Record (EMR) software to aid healthcare providers in understanding factors and challenges that may lead to suboptimal chemotherapy treatment. Using preliminary data, this study assessed a small subset of patients and their characteristics that may impact the initiation and completion of their oral chemotherapy regimen.

Methods: The data set consists of the following information: patient demographics and comorbidities, cancer type, line of therapy, oral oncology regimen, treatment-emergent adverse events and the resulting interventions, and reason for treatment discontinuation. Discrete data was pulled from the EMR for patients with referrals to start oral chemotherapy after April 1st, 2016. Only patients who received services within the GH integrated delivery system were included in the study. Patients who did not discontinue or complete therapy by August 26th, 2016, were excluded from data analysis. Duplicate patients, non-chemotherapy drugs, and referrals that did not indicate the line of treatment were also excluded. Chart reviews were conducted for relevant missing fields that were readily retrievable.

Results: Seventy-one of 792 patients with referrals to start therapy after April 1st met inclusion criteria. Despite plans for therapy, 27 patients did not start treatment, with 9 of 27 (33 percent) deceased or referred to hospice before treatment initiation. Other common reasons for not starting therapy included drug cost (5/27, 19 percent) and services received outside of GH

(5/27, 19 percent). Of 44 patients who started therapy and had early treatment discontinuation, patients on greater than 2nd line therapy were more likely to discontinue treatment due to tumor progression, hospice referral, or death (15/19, 79 percent) compared with those on 1st or 2nd line therapy (12/25, 48 percent). Of 792 patients, 30 were referred for treatment with a baseline Eastern Cooperative Oncology Group (ECOG) performance status of 2 or 3, with 8 patients fitting our study's inclusion criteria. All 8 patients discontinued treatment due to progression, hospice referral, or death. Compared with those on greater than 2nd line therapy, patients on 1st or 2nd line treatment appeared more likely to stop chemotherapy due to adverse events (24 percent vs. 11 percent), with similar findings for those with an ECOG score of 0 compared with 1 (44 percent vs. 14 percent).

Conclusion: Patients on greater lines of therapy or with poor ECOG scores were likely to discontinue therapy early due to tumor progression, hospice referral, or death. Initial results from GH's oral oncology database are promising, serving as a potential resource for providers and payers to better understand the challenges to initiating chemotherapy. Patient and treatment characteristics may also be used to predict reasons for chemotherapy disruption. Future use of the database may allow clinicians to intervene or provide support to patients in a more strategic manner in anticipation of the potential challenges to treatment.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 10-283

Poster Title: Assessing the implementation of coordinated, multidisciplinary strategies to increase asthma HEDIS quality measures in an integrated healthcare system

Primary Author: Bryan Davis, GROUP HEALTH COOPERATIVE, WA; **Email:** davis.ba@ghc.org

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Purpose: Group Health Cooperative (GHC) identified opportunities for improvement in the HEDIS quality metrics for asthma, the Asthma Medication Ratio (AMR) and the Medication Management for People with Asthma (MMA). The AMR metric was prioritized over the MMA because recent data suggests that it is a better surrogate marker for meaningful clinical outcomes. This data analysis was designed to evaluate the overall effectiveness of various strategies implemented to increase the AMR and explore the strategies with the largest impacts, as well as to identify opportunities to improve GHC's quality of care for asthma patients.

Methods: A pharmacy-led analysis in early 2015 identified opportunities to improve workflow processes, information technology (IT) support, and care team education for asthma quality measures. An Asthma Oversight Team was established to implement and monitor quality improvements, and included multidisciplinary leaders over various work streams. The first major workflow strategy implemented was standardized outpatient pharmacy work for asthma, which included performing Asthma Control Tests (ACT) at point of sale, facilitating dispensing of a controller medication, and counseling on proper technique of inhalation devices. The second major workflow intervention was a chronic disease management (CDM) program, in which clinical pharmacists operating under a collaborative drug therapy agreement (CDTA) manage patients with mild to moderate persistent asthma. Other process improvement strategies involved standardizing patient rooming workflow in primary care settings and creating non-compliant patient lists for outreach attempts by providers. Decision support tools included updating internal asthma guidelines and providing clinician education. IT enhancements included in-clinic alerts to identify poorly controlled asthma patients for the primary care team, defaulting albuterol refills to zero for new asthma orders, patient secure messaging for

obtaining ACT scores, and automated telephone refill reminders for controller medications. Health plan strategies included adding formulary quantity limits for albuterol.

Results: GHC provides both an integrated health system and a contracted network option. The strategies implemented did not impact both divisions equally and were evaluated separately. For the evaluation, a run chart was used to assess the performance of the multiple strategies initiated to increase the HEDIS quality measures. A run chart is an analytical tool used in quality improvement to measure trends and shifts of processes implemented over time. The strongest positive trend was observed in the integrated system after the initiation of the clinical pharmacist asthma CDM program, which increased the AMR by 4.4 percent over a 6-month period (approximately 1,300 patients reviewed and 26 percent enrolled in CDM). The increase in AMR was also influenced by an increase in outpatient pharmacy interventions, which was sustained at greater than 80 interventions per month over the 6-month period increase. The overall outpatient pharmacy strategy had greater than 1,200 interventions since inception, where approximately 85 percent performed an ACT and 30 percent dispensed a controller medication at point of sale. No trends were identified in the network. Ongoing subgroup analyses include clinical pharmacist CDM program outcomes, outpatient pharmacy interventions analysis by clinic and type, and changes in asthma-related hospitalizations.

Conclusion: The implementation of widespread strategies to improve patient care in asthma has shown positive results, as evidenced by the increase in HEDIS asthma quality measures. The strongest drivers of quality improvement were with pharmacist involvement, both in the CDM program where clinical pharmacists managed patients with mild to moderate asthma, and in outpatient pharmacies where pharmacists made interventions at point of sale. Continual analysis of the workflow process will give insight into the most effective strategies and continue to improve patient care.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-284

Poster Title: Pharmacist impact on transition of care in patients with diabetes.

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Purpose: Patients with diabetes commonly face complex barriers to healthcare that may lead to poor control of diabetes and associated comorbidities. Loss to follow up, or delayed follow up is one barrier that exists for some of these patients. The purpose of this research is to evaluate the impact of a newly initiated, pharmacist led transition of care clinic in patients with diabetes.

Methods: This study is pending Institutional Review Board approval. Baseline data will be obtained through retrospective chart review of electronic medical records. Patients admitted with a diabetes diagnosis will be screened for the following inclusion criteria: newly diagnosed diabetes within three months of admission, uncontrolled diabetes indicated by hemoglobin A1c of 8 percent or greater, or patients initiated on insulin therapy at time of discharge. Appropriate candidates will receive an ambulatory care referral, noting diabetes transition of care follow up, by a physician or case manager. The pharmacist will be notified of such referral and will meet with the patient prior to discharge to provide education and clinic information. Outpatient follow up will take place at the transition of care clinic, where a pharmacist will manage diabetes related care under collaborative drug therapy agreements. The primary endpoint will evaluate pharmacist impact on diabetes management by measurement of reductions in quarterly hemoglobin A1c and weekly average blood glucose readings. Secondary endpoints will evaluate reduction in readmission rates and diabetes related adverse events.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-285

Poster Title: Optimizing pharmacist driven antimicrobial services in the emergency department

Primary Author: Lawrence-Wynner Pajarillo, Highline Medical Center, WA; **Email:** lawrep2@gmail.com

Additional Author (s):

Purpose: The presence of a pharmacist in the emergency department is vital to improve quality of care and resource efficiency. According to the Center of Disease Control and Prevention, 2 million people become infected with bacteria that are resistant to antibiotics. With the growing need to address patient safety and antibiotic resistance, it will be necessary that pharmacists take an active role in providing services that optimize antibiotic treatment plans. The objective of this study is to enhance antimicrobial stewardship in the emergency department by assessing and implementing pharmacist led antimicrobial services.

Methods: The first part of this study will be a retrospective chart review that compares pharmacist led microbiology culture follow-up with the former nursing led culture follow-up. Primary endpoints include total time spent on culture follow-up, number of visits to the emergency department, and appropriateness of antibiotic chosen. A secondary endpoint is documentation of this intervention in the electronic medical records. The second part of the study will be a prospective cohort study that will compare pharmacist led antibiotic discharge counseling versus the current nursing led antibiotic discharge counseling. A guideline for pharmacist driven medication discharge counseling will be developed and implemented to educate the patient on both the indication and drug information for the prescribed antibiotic. Post-discharge interviews will be conducted to gather the primary endpoints of patient satisfaction with the antibiotic counseling, as well as time to antibiotic dispensing at an outpatient pharmacy. Furthermore, the number of interventions done by the pharmacist upon review of the discharge prescription will be recorded as a primary endpoint. Secondary endpoints include potential cost savings and types of interventions.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-286

Poster Title: Implementation and evaluation of a pharmacist-driven training on palliative care medications and infusion devices

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Purpose: The goal of palliative care is to provide symptomatic relief from serious illness, while preserving the patient's quality of life. At MultiCare Good Samaritan Hospital, there is limited specialized training for nurses and pharmacists on palliative care medicines. This lack of standardized training has led to inconsistencies and underutilization of potentially beneficial therapies. The purpose of this project is to design, implement, and evaluate a pharmacy-driven training on palliative care medications and infusion devices to nurses and pharmacists.

Methods: This quality improvement project will be conducted at MultiCare Good Samaritan Hospital. A pre-education assessment will be conducted on palliative care unit nurses and pharmacists to determine baseline knowledge and gaps. The Palliative Care Medication Order Set will be updated and education in the form of oral presentations, reference handouts, and required computer-based learning modules will be created in collaboration with palliative care providers. Education modules and didactic learning sessions will encompass an overview of palliative medicine, palliative medications, palliative sedation, and training on a new infusion device that allows for intravenous or subcutaneous administration of continuous infusions and patient-controlled analgesia. A post-education assessment will be conducted and results will be compared with pre-education assessments.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-287

Poster Title: Implementation of pharmacist-driven transitions of care position in an acute care community hospital

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Purpose: Pharmacist involvement in the transition of care has been shown to reduce medication discrepancies and improve health outcomes. The objective of this project is to implement a transition of care pharmacist position at MultiCare Good Samaritan Hospital by developing workflows, standards, and responsibilities with targeted outcomes. The ultimate goal is to reduce re-admissions by optimizing discharge medication therapy management with a focus on high risk re-admission disease states.

Methods: MultiCare pharmacy has conducted multiple studies demonstrating the effectiveness of pharmacist involvement in medication management during transitions of care. Outside of MultiCare, other institutions have had success in reducing re-admissions by implementing a transition of care pharmacist. By reviewing these past studies, visiting other successful programs, and incorporating literature reviews, a transition of care pharmacist role will be tailored for MultiCare. Workflow, standards and expectations will be developed for the specific population and current staffing at this site. This position will utilize electronic medical record features to triage patients from admission and prioritize them on highest risk for re-admission. This will include but not limited to: a high risk re-admission diagnosis, age 65 years or older, and poor medication adherence upon admission. Responsibilities may include: optimization of discharge medications including review of prior to admission medication and incorporating guideline based therapy review, evaluation of barriers to medication adherence, utilization and referral for medication assistance programs, providing education and medication counseling through teach back, and follow up consult. Data will be collected for the following: number of medications upon admission/discharge, type of medication discrepancy, referral to medication assistance, assessment of patient education on discharge medications, and total time spent

with patient. This data will be analyzed for possible reduction of re-admissions and the number of medication discrepancies intervened by the transition of care pharmacist.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-288

Poster Title: Impact of discharge medication reconciliation and patient education strategies on readmission rates of heart failure patients

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Purpose: The Center for Disease Control estimates that 6 million Americans have heart failure. Moreover, an analysis of Medicare claims indicate that 24 percent of patients admitted to hospitals for heart failure will be readmitted within a month. Defining strategies to facilitate transitioning these patients to the outpatient setting serves as one of the greatest opportunities to reduce readmission rates. The objective of this project is to implement a pharmacist-driven process to conduct medication reconciliations, provide patient education at time of discharge and assess the impact on readmission rates of heart failure patients.

Methods: This project will take place in a 437-bed tertiary care hospital and is a quality improvement project that is exempt from Institution Review Board Approval. Electronic medical record reviews will be conducted for patients admitted due to heart failure. At time of discharge, reconciliation of medications will be completed to determine if the patient is on appropriate therapy. Any recommendations regarding changes to therapy will be made to the discharging physician and data will be collected to assess the impact of pharmacists in optimizing discharge medications. The pharmacist will also provide education on heart failure, lifestyle changes and signs of decompensation to the patient. Filled prescriptions will be delivered to the bedside and the pharmacist will counsel patients on their heart failure medications, reviewing indications and strategies to increase adherence. Time spent counseling the patient will be documented to determine the replicability of this process. Thirty days after the index admission, the patients' medical profile will be examined and phone calls will be made to determine if they were readmitted within this period. A control group of patients who were admitted to the hospital in relation to heart failure but did not receive the intervention will also be reviewed to determine baseline readmission rates. The two groups will be compared to determine the primary outcome of pharmacist interventions on readmission rates.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-289

Poster Title: Pharmacist impact on the utilization of a rapid diagnostic blood stream test in an antimicrobial stewardship program

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Purpose: Tailoring empiric broad-spectrum antimicrobial therapy is important to prevent the development of multi-drug resistant organisms as well as adverse effects. However, traditional culture and sensitivity data may take up to several days to produce results. The Verigene System, a gene-based rapid diagnostic test (RDT), allows the identification of specific pathogens and resistance markers in the blood within three hours after a positive gram stain. The purpose of this study will be to evaluate pharmacist utilization of RDT results, time to appropriate antibiotic therapy, and impact on pharmacist workflow.

Methods: This is a quality improvement project and is exempt from Institutional Review Board approval. RDTs are run automatically on all positive blood cultures at our hospital, a 437-bed acute care tertiary Level II trauma center. Baseline data will be collected retrospectively through an electronic infection surveillance program to determine time to appropriate antibiotic therapy without the intervention of a pharmacist. The antimicrobial stewardship pharmacist will begin to receive alerts for positive RDT results and will make recommendations to change therapy if necessary using a standardized decision support tool and clinical judgement. All adult patients with a positive RDT result during the time frame will be included. The results of these interventions will be tracked for an extended period of time. Data points to be collected include patient age, weight, gender, white blood cell count, renal and hepatic function tests, pertinent physical exam findings, RDT results, culture and sensitivity reports, initial and final antibiotic therapy, time to appropriate antibiotic therapy, length of antibiotic therapy, and length of stay. The primary outcome is to determine whether pharmacist intervention reduces the time to appropriate antibiotic treatment. Secondary outcomes include length of stay, physician acceptance of pharmacist recommendations, and duration of antibiotic

treatment. Analysis of these results will assist to further define the role of the antimicrobial stewardship pharmacist in RDT result monitoring.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-290

Poster Title: Development and implementation of continuous infusion vancomycin for methicillin-resistant Staphylococcus aureus (MRSA) infections in adult medical and neuro intensive care units

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Purpose: Early and adequate obtainment of therapeutic vancomycin serum levels for MRSA infections can be challenging in patients admitted to the intensive care unit (ICU) secondary to altered vancomycin pharmacokinetics and the need for higher-dose regimens. Administration of vancomycin by continuous infusion (CI) in the ICU setting has been shown to provide rapid target concentration attainment with lower overall drug exposure and reduced nephrotoxicity. The objective of this study is to assess the impact of CI vancomycin use in the ICU after development and implementation of a CI vancomycin dosing strategy.

Methods: This is a quality improvement project and exempt from Institutional Review Board approval. The study will take place in the adult medical and neuro ICUs of a 437-bed acute care tertiary Level II trauma center. Vancomycin use in the ICU will be determined by examining historical data through an electronic infection surveillance program. Criteria for patients who are candidates for CI vancomycin will be identified by evaluating duration of vancomycin therapy greater than 72 hours, confirmed or suspected MRSA infection, renal function, infection source, time to therapeutic serum concentration, and clinical condition. Collaboration with pharmacists and the infectious disease service will utilize historical data from the institution and published studies involving CI vancomycin to develop an institution-specific CI vancomycin dosing protocol. Patients in medical and neurosurgical ICUs who are eligible for CI vancomycin based on the generated dosing protocol will receive vancomycin by CI for the duration of vancomycin therapy, regardless of transfer to a different service. Demographic and pertinent data regarding the current hospitalization and medication use will be collected. The

primary outcome will be rates of nephrotoxicity in patients receiving CI vancomycin compared to historical controls. Secondary outcomes to be assessed include the following: time to therapeutic serum concentration, duration of vancomycin therapy, total vancomycin exposure, and concomitant nephrotoxic agents.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 10-291

Poster Title: Communicating a pharmacy department's performance by generating new performance metrics

Primary Author: Brian Havens, Multicare Health System, WA; **Email:** brian.havens@multicare.org

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Purpose: With the wide-spread use of electronic medical records (EMR), data in healthcare is abundant; however, deriving meaningful information from this data is challenging. For every performance metric or patient outcome that can be easily measured (e.g. readmissions rates), there are multiple leading indicators (medication compliance, appropriate prescribing, etc.) which are often difficult to measure but could be powerful predictors of the outcome in question. The goal of this project is to develop a process to identify key leading indicators, generate reproducible metrics to measure over time, and communicate the findings to pharmacy personnel in an effort to drive performance.

Methods: Utilizing multiple databases within the setting of a 437-bed acute care tertiary hospital, performance metrics will be identified based on strategic initiatives of the health-system and measured over time. These performance metrics could include but are not limited to high-spend medication utilization, pharmacist interventions, or chosen patient outcomes. For each of the performance metrics identified, multiple leading indicators will then be developed and tested for correlation against the outcome they are designed to predict. The leading indicator that best correlates with the performance metric will then be put into a dashboard and distributed to the pharmacy department personnel. Ideally multiple performance metrics and their corresponding leading indicators will be from various departments throughout the hospital and combined into a single dashboard. This communication tool will be used to increase transparency throughout the organization, further energize pharmacy personnel involvement, and attempt to measure the strategic direction of the pharmacy department.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-292

Poster Title: Appropriateness and safety of warfarin use in atrial fibrillation patients in pharmacist-managed anticoagulation clinics

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Additional Author (s):
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Purpose: Roughly 2.7 million people suffer from atrial fibrillation (afib), which is more prevalent in the elderly. Afib increases the risk of stroke therefore warfarin is commonly prescribed, but it carries risks such as bleeding. Due to the availability of pharmacist-led anticoagulation clinics, warfarin assessment by physicians of benefit verses risk as the patient ages may be diminished. The object of this study is to assess the appropriateness and safety of warfarin usage in afib patients based on risk stratification to further enrich pharmacist-provider interventions and to assess the outcomes.

Methods: This is a quality assurance project, which is exempt from Institutional Review Board approval. The project will consist of a random sample of afib patients being managed at two pharmacist-led anticoagulation clinics. Data that will be collected are components of the CHA2DS2-VASc score, HAS-BLED score, appointment cancelations, insurance type as a measure of food insecurity, time in therapeutic range, and other anticoagulation or antiplatelet medications. Patients will then be assessed for their risk of stroke and bleeding using an online risk assessment tool in addition to the previously mentioned factors. Data will then be analyzed for appropriateness of warfarin usage in these patients. If interventions are warranted then the data collected will be used to help improve pharmacists' discussion with providers about the discontinuation of warfarin therapy. The outcome of the pharmacist interventions will be measured.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 10-293

Poster Title: Effects of discharge counseling on readmissions and emergency department visits

Primary Author: Shadi Khosravi, PeaceHealth Columbia Network, WA; **Email:** skhosravi@peacehealth.org

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Purpose: Discharging patients from the hospital is a complex process that has its own challenges. Among Medicare patients, almost 20 percent who are discharged from a hospital are readmitted within 30 days. Preventing avoidable readmissions has the potential to profoundly improve both the quality of life for patients and the financial wellbeing of healthcare systems. During this study, the impact of a discharge education program on 30-day readmissions and emergency department (ED) visits will be evaluated.

Methods: An observational pre and post analysis will be conducted at PeaceHealth Southwest Medical Center to compare rates of hospital readmissions and return to the emergency department during one-month period before and after implementation of discharge education for a high-risk subgroup. The study will include patients prescribed with two or more medications for the treatment of chronic diseases. The patients randomized into the intervention group will receive pre-discharge counseling by the clinical pharmacist about each prescribed medication. The control group will receive no counseling. The primary outcome will be rates of readmissions and return to the emergency department (ED) within 30 days of discharge.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 10-294

Poster Title: Establishment of policies and procedures for the training, implementation and auditing of the United States Pharmacopeia (USP) 797 and 800 regulations at Peacehealth Southwest

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Purpose: Every hospital that compounds sterile products must comply with the USP (United States Pharmacopeia) rules and regulations. Peacehealth is not up to code with the current USP 797 sterile compounding regulation nor the USP 800 regulations which discuss hazardous drug best practices. The goal of this project is to develop procedures and protocols to help Peacehealth Southwest Medical Center follow these rules and regulations. Once these policies and procedures have been optimized, they will be used to ensure regulation compliance throughout all Peacehealth system hospitals.

Methods: The goal of this project is to have 100% employee compliance in the various USP 797 and 800 auditable fields by January 2016. These auditable fields include garbing, handwashing, cleaning, aseptic technique and documentation. Employees at Peacehealth Southwest Medical Center (PHSW) will be trained using materials provided by the Washington State regulating body along with those created by Peacehealth pharmacy. Training will include visual, auditory and kinetic methods including videos, reading material and hands on practice. After first round training is complete, audits will be conducted to test compliance and understanding of the regulations. These audits will include written exams, growth medium manipulation testing, and technique observation using an objective rubric in each of the auditable fields. Employees that perform audits will be trained as well to ensure accurate and consistent employee testing. The results collected from each audit field will lead to process improvement interventions to fix any holes in the training or testing. Then a second round of auditing will occur after the appropriate interventions have been integrated into the employee's training. The results of this second

audit will again provide process improvements until 100% compliance is observed at PHSW. Once training materials are established at PHSW, training will then be conducted at the other Peacehealth hospitals within the system.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-295

Poster Title: Implementation of oncology clinical services provided by pharmacists for reimbursement through provider status

Primary Author: Angela Yuen, PeaceHealth Southwest Medical Center, WA; **Email:** ayuen@peacehealth.org

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Purpose: Pharmacists are recognized as providers within Washington State. This law is the first in the nation to require health insurance carriers to include pharmacists as network providers and reimburse for clinical services. Our hospital's health system oncology pharmacists offer limited clinical services to patients due to the lack of a collaborative practice agreement. This study's objective is to enroll oncology pharmacists as providers with Washington insurance carriers and bill for clinical services. With the recently approved 1.0 FTE, this will support the creation of additional clinical oncology services that will improve patient care and enhance collaboration within the interdisciplinary team.

Methods: This study was submitted to the Institutional Review Board for approval as an exempt study. Oncology pharmacists within our health system network will be enrolled as providers through our credentialing department with Washington insurance carriers. Each pharmacist will complete a Washington Practitioner application and provide requested supplemental materials. Current procedural terminology (CPT) coding will used to bill according to the amount of time spent on direct patient care. Education will be provided for pharmacists on suitable documentation of visits to qualify for proper billing tiers. Billing processes will be implemented with assistance from our medical staff office and commercial payers. Credentialed pharmacists are anticipated to bill as providers for patient care services beginning in January 2017. The initial oncology clinical service offered to patients as fee-for-service will be chemotherapy patient teaching consults (PTC). PTC parameters will be defined and implemented as a policy to be added to the current ambulatory care collaborative drug therapy agreement. Physicians will be able to refer patients to pharmacists for PTC prior to chemotherapy infusions. Once this service has been established, additional services will be developed to allow physicians to

request consultations for pharmacists to manage therapy and allow for more time to address critical or complicated patients. These services will include breakthrough nausea and vomiting, venous thromboembolism prophylaxis, oral chemotherapy, and diarrhea or constipation management.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-296

Poster Title: Development and implementation of pharmacy driven services to reduce hospital readmissions through medication adherence testing

Primary Author: Amanda Hack, PeaceHealth Southwest Medical Center, WA; **Email:** ahack@peacehealth.org

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Purpose: For patients with chronic medical conditions, hospital readmissions are costly and often preventable occurrences. Although many factors play into readmission rates, non-adherence to medications is thought to be a major contributing factor. Technological advances give health care providers various means to monitor medication adherence in this patient population. Through blood sampling, a qualitative medication screening panel is one such tool that can detect adherence to medications used to manage chronic disease states. This project will pilot incorporating screening panel results as an aid in pharmacist driven medication adherence counseling.

Methods: This project will be submitted to the internal institutional review board for approval prior to initiation. Institution specific admission and 30-day readmission rates for heart failure will be collected prior to initiating the pilot to serve as a comparator. The initial phase will include developing a pharmacy driven protocol for ordering and review of a medication screening panel in the inpatient setting. Once this protocol is established, the panel will be ordered for all qualifying patients with a documented or suspected heart failure exacerbation prior to receiving doses of inpatient medications. Results will then be reviewed by clinical pharmacists and/or a pharmacy practice resident to screen for non-adherence to home medications, duplicate medication classes, and to assist in adherence counseling. Results inconsistent with the reconciled medication list will be communicated to the appropriate provider and documented in the patient's electronic medical record. If indicated, patients will be offered adherence counseling by a clinical pharmacist or pharmacy practice resident. The

primary endpoint of this project will be 30-day readmission rates for heart failure exacerbation which will be determined through chart review. Upon completion of the pilot, analysis will be performed to determine the utility of this service.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-297

Poster Title: Implementation of an inpatient education service for patients on warfarin

Primary Author: Rupinder Kaur, PeaceHealth St. Joseph Medical Center, WA; **Email:** rupi.kaur@wsu.edu

Additional Author (s):

Purpose: Pharmacists play an essential role in medication management and adherence; this is especially true when patients receive pharmacist led education. Implementation of a patient education program led by pharmacy students and residents can reinforce the importance of patient education and optimize adherence, and understanding of high alert medications. The primary outcome of this study will be to initialize and implement warfarin education at the medical center. Secondary outcome will be evaluation of Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores on selected units.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will consist of two phases. The first phase of this study will be implementation of a pharmacy student/resident led educational service. Data collection throughout the study will consist of inpatient specific factors (unit, age, sex, indication for warfarin, goal INR, new start versus continuing, and follow-up plan) to later help determine the impact of the educational intervention and HCAHPS scores. Patients on warfarin will receive an unscheduled visit from student pharmacists or a pharmacy resident prior to discharge. The patient will receive bedside counseling and educational resources (written material) on warfarin. The educator will also be responsible for ensuring there is a referral/ follow-up plan in place for the patient after discharge. The education will be documented in the electronic medical record. All pharmacy students on rotation at the medical center will get individualized instructions on the education process and the standard educational materials. The second phase of the study will consist of a retrospective analysis of HCAHPS performance scores prior to the implementation of discharge counseling to be compared with HCAHPS scores after implementation.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-298

Poster Title: Implementation of vancomycin dosing competency program for clinical pharmacists to improve clinical outcomes and confidence

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Additional Author (s):

Purpose: The safe use of vancomycin requires continuous drug therapy monitoring which is often the responsibility of clinical pharmacists. At many institutions, clinical pharmacists have varying degrees of educational background and experience with dosing and monitoring vancomycin. This project is designed to provide entry-level and on-going vancomycin dosing and monitoring education to all pharmacists on the clinical staff at PeaceHealth St. Joseph Medical Center and determine if clinical outcomes and clinical confidence can be improved by the implementation of a vancomycin learning module.

Methods: This study will be submitted to the Institutional Review Board for approval. Comprehensive and contemporary information regarding the safe and efficacious use of vancomycin as well as institution-specific policy and protocols will be organized into an interactive, computer-based learning module for the clinical pharmacy staff at PeaceHealth St. Joseph Medical Center. The content of the learning module will be designed to ensure correlation with the current approved vancomycin collaborative drug therapy agreement. All clinical pharmacists in the inpatient setting will complete the learning module. Pre- and post-module quizzes and clinical confidence surveys will be used to qualitatively assess the learning material. Annual retrospective vancomycin use evaluations will be used to compare clinical outcomes before and after implementation of the learning module. Specifically, percent of trough levels appropriately drawn and percent of trough levels within the therapeutic range will be assessed to quantitatively determine the impact of this supplemental education.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-299

Poster Title: Transitions of care optimization and expansion for COPD patients

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Purpose: Project team members aim to expand and optimize our transitions of care program to include COPD patients. The goals associated with this project are improving patient compliance with combined education with respiratory therapy, performing admission and discharge medication reconciliation, and communication with the patient's primary care provider (PCP) upon discharge. This project will utilize a multidisciplinary team to reduce 30-day readmission rates for COPD patients at Providence Centralia Hospital.

Methods: This project is in the process of review by the Institutional Review Board (IRB) as a quality improvement project. Upon receiving IRB approval, data collection will begin. Inclusion criteria for the intervention group consists of patients with a primary diagnosis of COPD who are being followed by the Transitions of Care (TOC) clinical team, and who are discharged between the hours of 0800 and 1600. Medication reconciliation will be completed soon after admission, as well as prior to discharge to ensure guideline-recommended and affordable treatment options are made. Pharmacists will provide patient education, in a joint effort with respiratory therapy, prior to discharge to ensure medication compliance and optimal disease state management. The TOC pharmacist will write a discharge note summarizing the hospitalization, as well as patient specific recommendations for therapy optimization. This information will be sent electronically to the patient's PCP via EPIC, or other providers at the clinic as appropriate (i.e. pharmacists, RN care coordinators, etc.). Data collection will assess the 30-day readmission rate for COPD patients.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-300

Poster Title: Optimizing antimicrobial stewardship: An education based approach

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Purpose: The new antimicrobial stewardship standard set forth by the Joint Commission for hospitals and critical access hospitals effective January 1, 2017 identifies provider education as one of its core elements of performance. In alignment with the new standards, this quality improvement study aims to modify the prescribing behavior of clinicians through an interactive e-learning module centered around specifically designed patient cases in order to optimize antimicrobial stewardship throughout Providence Centralia Hospital and Providence St. Peter Hospital.

Methods: This quality improvement project is pending approval by the Institutional Review Board. A retrospective analysis of hospitalized patients who are 18 years of age or older who received antibiotics during their admission will be conducted in order to create specific patient cases that focus on areas of improvement relating to antimicrobial stewardship. These patient cases will be used to develop an interactive e-learning module that will be shown to new hire clinicians as well as be used to develop a live interactive presentation that will be conducted during a continuing medical education meeting for currently employed clinicians. Subjective data will be collected after the live presentation using a questionnaire to assess current clinician's opinions on how well the provided information improved their understanding of antimicrobial stewardship practices, appropriate antibiotic usage, and if they anticipate any changes in their antibiotic prescribing behavior. Objective data will be collected before and after the implementation of provider education to assess for significant changes in antibiotic use pertaining to the specifically designed patient cases.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-301

Poster Title: Impact of a reported penicillin allergy on clinical outcomes

Primary Author: Kate Unterberger, Providence Regional Medical Center – Everett, WA; **Email:** kate.unterberger@providence.org

Additional Author (s):

Purpose: Despite the prevalence of reported penicillin allergies among inpatients, very few have a true allergy. In most cases, the reported "allergy" is a misclassified prior adverse reaction. Unfortunately, this misrepresentation often leads to the unnecessary avoidance of beta-lactams in patients who could tolerate them and in whom penicillins are indicated as first-line treatment. Alternative antibiotics selected may be clinically inferior and associated with prolonged hospital stays and increased adverse event rates. The purpose of this project is to evaluate the impact of a reported penicillin allergy on clinical outcomes in patients admitted to Providence Regional Medical Center – Everett (PRMCE).

Methods: This study will be submitted for Institutional Review Board approval. The electronic medical record system was used to generate a report identifying all patients admitted to PRMCE between September 1, 2015 and August 31, 2016 who had a reported penicillin allergy and received antibiotics. Patients were excluded if they were younger than 18 years of age, were incarcerated, or had a confirmed anaphylactic reaction to a penicillin. Patients charts were reviewed to collect the following data: age, gender, allergy severity, reaction, indication for antibiotics, if beta-lactam was the preferred treatment for infection, antibiotics received, reaction to antibiotics received, duration of treatment, adverse events requiring antibiotic discontinuation, Clostridium difficile infection, readmission for the same infection, length of stay, and antibiotic cost. Data will be analyzed to determine clinical outcomes based on reaction reported and antibiotics received.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-302

Poster Title: Evaluation of treatment duration in patients discharged with antibiotics for either acute uncomplicated cystitis or pyelonephritis from the Providence Regional Medical Center Everett emergency department.

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Purpose: The Infectious Diseases Society of America (IDSA) has clinical practice guidelines for the treatment of acute uncomplicated cystitis and pyelonephritis in women. The IDSA states that despite published recommendations, studies have demonstrated a variation in prescribing practices. The objective of this retrospective review is to determine the extent to which the duration of treatment of acute uncomplicated cystitis and pyelonephritis in women discharged from the Providence Regional Medical Center Everett (PRMCE) emergency department complies with the IDSA guidelines.

Methods: This is a single center, retrospective chart review that will include female patients 18 to 50 years old who were discharged from the PRMCE emergency department on antibiotics for acute complicated cystitis or pyelonephritis between January and September, 2016. Patients who meet the IDSA criteria for complicated cystitis will be excluded from this study. Data that will be collected include: patient's age, diagnosis, antibiotic prescribed, duration of therapy, urine culture and microbiology results, and antimicrobial stewardship interventions following sensitivities. In addition, since the IDSA considers pregnant women to be complicated cases of cystitis and pyelonephritis the number of pregnancy tests performed will also be evaluated. The primary outcome is to measure the percentage of patients who were treated for a different duration of therapy than recommended by the IDSA guidelines. Secondary outcomes include percentage of urine cultures taken during admission, number of pregnancy tests performed, and antimicrobial stewardship interventions.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-303

Poster Title: Initiating a pharmacist-physician practice care model for opioid-dependent patients using buprenorphine/naloxone in an ambulatory care setting

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Purpose: Opioids such as heroin, morphine, and prescription pain medications have been abused and leads to addiction in the United States. The consequences of abuse of opioids have been devastating to the health, social, and economic welfare of all societies, and continues to rise. The purpose of this study is to establish a pharmacist-physician collaborative practice for opioid-dependent patients. The collaboration will allow patients to have greater access to medication treatments, decrease physician burden, improve patient care, decrease overall cost, and prevent medication diversion.

Methods: To address this complex issue of opioid abuse, specially registered physicians are frequently referred to manage a patient's addictions through methadone clinics or prescribing Suboxone. Physicians are often hesitant to become specially registered to manage an opioid treatment program due to the heavy workload involved with patient monitoring, treatment maintenance, and patient follow-up. Physicians must undergo specialized training and registration in order to initiate an opioid treatment practice. There is an opportunity for pharmacists to ease this burden and decrease health care related costs by working closely with buprenorphine-prescribing physicians. Pharmacists will be referred by specially registered physicians after induction and stabilization phase is complete. Pharmacists will be involved in the maintenance phase of Suboxone which consists of weekly monitoring to review urine toxicology, review patient adherence, and assess treatment barriers. Urine toxicology will measure buprenorphine and opioid levels. Buprenorphine levels will indicate adherence to treatment plan and opioid levels will indicate illicit drug use. The specially registered physician will then be notified of the patient's progress by the pharmacist and continue prescribing Suboxone based on the pharmacists recommendations.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-304

Poster Title: Utilizing clinical pharmacists to streamline treatment in patients with hepatitis C in a medical residency teaching clinic

Primary Author: Luke Dearden, Providence Sacred Heart Anticoagulation and Pharmacotherapy Clinic, WA; **Email:** luke.dearden@providence.org

Additional Author (s):

Purpose: The utilization of clinical pharmacists in the management of patients with hepatitis C is emerging as a successful practice option. While the newest medications used to treat hepatitis C virus (HCV) are highly effective, they are exceedingly expensive and often require a lengthy prior authorization process before treatment initiation. Pharmacists may be the best equipped health professional to streamline time-to-treatment in patients with HCV. The primary objective was to evaluate the time from prescription authorization to treatment initiation with and without pharmacist involvement. Secondary outcomes included cost savings and analyses of the total number of patients treated.

Methods: After a comprehensive work-up by a physician, patients with hepatitis C were referred by a medical resident at a teaching clinic to a pharmacist-run pharmacotherapy clinic. An appropriate hepatitis C treatment was prescribed by the pharmacist, and the prior authorization process was managed by members of the pharmacotherapy clinic. Time-to-treatment was closely monitored and compared to a cohort of hepatitis C patients previously treated and managed without pharmacist involvement. After medication initiation, pharmacists participated in patient management throughout the entire treatment course in an effort to reduce costs and lighten the load of physicians. Their responsibilities included ordering and coordinating four week labs, contributing to a five week follow up visits, providing medication education, screening for side effects, and promoting adherence. Prior to study initiation pharmacists within the pharmacotherapy clinic were assigned to a team of family and internal medicine residents. While the pharmacotherapy clinic accepted referrals from medical residents outside their team, pharmacists only played a direct role in the identification of hepatitis C patients whose primary care provider was a member of the assigned team. The total number of patients treated with pharmacist identification was compared to the number of patients treated without pharmacist identification.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-305

Poster Title: Development and Expansion of the Discharge Medication Bedside Delivery Service

Primary Author: Christopher Tong, Providence Sacred Heart Medical Center & Children's Hospital, WA; **Email:** christopher.tong@providence.org

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Purpose: The current discharge medication bedside delivery service delivers medications to the north side of the Orthopedic Post-Surgical floor of Sacred Heart Medical Center and Children's Hospital. The purpose of this project is to develop and expand the bedside medication delivery service to deliver medications to patients on the south side of the same floor and evaluate the possible benefits and resources required for future expansion. This service will ensure that patients have the medications that they need, such as anticoagulants or pain relievers, prior to discharge.

Methods: This expansion program will be continued on the south side of the Orthopedic Post-Surgical floor of Sacred Heart Medical Center. Informational brochures of the bedside delivery program will be handed out to patients prior to discharge. At that time, prescription insurance information will be obtained from any patients wishing to purchase their medications through the bedside delivery service. Any changes to administration directions or issues regarding insurance coverage or authorization will be addressed by the outpatient pharmacy prior to discharge. At time of discharge, medications will be charged to the patient in their room by a concierge pharmacy technician. Each patient will receive counseling for their medications via telephone, or face-to-face interaction with a pharmacist. Surveys will be given to patients after their hospital stay to evaluate their satisfaction on timeliness of prescription filling, quality of pharmacist consultation, and ease of the bedside delivery service. Parameters to be measured include patient and nursing staff satisfaction.
Data previously gathered from the bedside delivery service on the north side of the Orthopedic Post-Surgical floor will be reviewed alongside new data collected from the south side, for possible benefits and resources required for future expansion of this service to other floors.

This project is Institutional Review Board exempt because it is for performance improvement purposes.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-306

Poster Title: Analysis of Excessive Warfarin Anticoagulation in Post Cardiac Surgery

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Purpose: Excessive warfarin anticoagulation in post cardiac surgery is very common. Patients who are post open heart coronary artery bypass grafting (CABG) or valve replacement are more sensitive to warfarin initiation than those starting warfarin for atrial fibrillation, deep vein thrombosis treatment, pulmonary embolism treatment, and post-stroke. INRs that have risen too rapidly have been associated with bleeding and longer hospital stays as well as increased morbidity and mortality in patients post vascular surgery. The purpose of this project is to provide caregivers with a warfarin dosing guideline to titrate slowly and at lower doses to prevent bleeding.

Methods: Our warfarin and vitamin K dosing guidelines are available for all patients initiated on warfarin at our facility. An evaluation of patients who are post CABG or valve replacement will be completed and warfarin dosing based on the current protocol will be analyzed along with INR values and incidence of bleeding complications. The data will be used to adjust the current protocol specifically for this group of patients. Pharmacists will be educated and will test the changes to the protocol. We will be monitoring the incident of supratherapeutic INRs and bleeding post change. This is a performance improvement project and is IRB exempt.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Descriptive Report

Session-Board Number: 10-307

Poster Title: Evaluation of prescribing patterns of critical care providers for ICU patients with the diagnosis of pneumonia at an acute care hospital

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Additional Author (s):
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Purpose: With the diminishing effects of marketed antimicrobials due to resistance, proper empiric and definitive treatments for pneumonia are vital to the survival for patients admitted to the ICU. This project was designed to evaluate prescribing patterns of critical care providers for the diagnosis of hospital acquired pneumonia (HAP) or aspiration pneumonia in comparison to the IDSA HAP clinical practice guidelines. The purpose of this project is to present the collected data to critical care providers in a de-identified manner and provide education in order to improve and promote antimicrobial stewardship.

Methods: The electronic medical record system was used to identify all patients admitted to the ICU with a diagnosis of pneumonia between February and April of 2016. The following data will be collected for evaluation of prescribing patterns: critical care provider consulted, empiric and definitive antimicrobial selection, days of therapy and resulted microbial cultures. Data analysis will focus on appropriateness of antimicrobial selection and duration of therapy per the IDSA HAP clinical practice guidelines and will be presented to the critical care providers in a de-identified manner. Education on the IDSA HAP guidelines will be given to the critical care providers as well. After presentation of the collected data and education, a follow-up patient chart review will be performed between February to April of 2017 to monitor for changes in prescribing practices. This is a performance improvement project and is IRB exempt.

Results: n/a

Conclusion: n/a

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-308

Poster Title: Evaluation of sedation and analgesia use in ventilated pediatric intensive care unit patients and weaning of sedation medications

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Purpose: Sedation and analgesia play an integral role in caring for mechanically ventilated children. Both under-sedation and over-sedation may lead to complications with care such as, prolonged intubation, and increased pain, agitation, and length of stay. Increased time on such sedatives and analgesia may lead to withdrawal symptoms and warrant medication weaning. At Providence Sacred Heart Medical Center and Children's Hospital, there is a protocol that uses methadone and diazepam for treatment of withdrawal from opioid and benzodiazepine tolerance. This current protocol does not address weaning from alpha-2-adrenergic agents, nor does it specifically address the implementation and monitoring of these medications.

Methods: A retrospective chart review will be conducted to evaluate the course of sedation in mechanically ventilated pediatric intensive care unit (PICU) patients for assessing the appropriateness of each sedation and analgesic medication, duration of sedation and analgesia, medication selection for each medication wean, and duration of each wean. The data collected will be used to determine appropriateness of initiating and sustaining sedation in PICU patients, as well as determining a protocol to wean off of alpha-2-adrenergic agonists, which will specifically focus on the addition of dexmedetomidine to be added to the current wean protocol. Physician, nurse, and pharmacist education will be provided for the new protocol. After protocol implementation, another chart review will be conducted to assess the effectiveness of the updated protocol. This is a performance improvement project and is IRB exempt.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Descriptive Report

Session-Board Number: 10-309

Poster Title: Evaluation of hypoglycemic events associated with anti-diabetic agents to identify potential pharmacist initiated interventions to reduce hypoglycemic events.

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Purpose: The purpose of this project is to proactively prevent hypoglycemia by identifying repeat medication issues that could potentially increase a patient's chance of hypoglycemia. The inpatient glucose range as recommended by The American Diabetes Association is 140-180 mg/dL. Continuing a patient's home regimen in the hospital can increase the risk of hypoglycemia when combined with other factors such acute illness and not consuming their normal diet. Hypoglycemia can have serious consequences that could potentially be harmful to patients and counterproductive.

Methods: Patients will be identified by using both the electronic medical record and an electronic screening tool who had a blood glucose level of < 70 mg/dL, were admitted to the cardiac unit, and had an anti-diabetic medication on their medication administration record. Each patient will be evaluated for the cause of the event as well as changes made to their anti-hyperglycemia regimen post hypoglycemic event, steroid use, and if their home regimen was resumed inpatient. Once a common issue leading to hypoglycemia is identified, ways by which pharmacists can intervene will be developed. The clinical pharmacist will then intervene based on patient need. After a pilot is completed, the incidence and causes of hypoglycemia will be analyzed to look for improvement. This is a performance improvement project and is Institutional Review Board exempt.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-310

Poster Title: Evaluation of institutional proton pump inhibitor use and implementation of a pilot program to reduce utilization within inpatient critical care and non-ICU settings

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Purpose: Proton Pump Inhibitors (PPIs) are commonly used within the inpatient setting to treat or prevent gastrointestinal bleeds or reflux conditions. Additionally, in-hospital PPI use has been increasing recently without a specific indication. Emerging data identifies significant risks associated with PPI over-use: increased rates of Clostridium difficile-associated diarrhea, pneumonia, and drug-drug interactions. With long-term use, PPIs may lead to hypomagnesaemia, B12 deficiency, and bone fracture. This project aims to target areas of high PPI usage within Providence Sacred Heart Medical Center and Providence Holy Family Hospital and to align PPI usage with recommendations from current guidelines.

Methods: A Medication Use Evaluation (MUE) will be performed to analyze high areas of inappropriate utilization of PPIs within Sacred Heart and Holy Family. Clostridium difficile rates within each hospital unit will be compared to PPI utilization on those units. carene data is collected, two ospital unit will be compared to PPI utilization on those units. tionally, pharmacists rounding carene data is collected, two ospital unit will be compared to PPI utilization on those units. tionally, pharmacists rounding Once baseline data is collected, two units will be selected for the pilot project, one Intensive Care Unit (ICU) and a non-ICU unit. Within the selected units, prescribing practices will be analyzed for appropriate indications for PPIs to determine which current practices are discordant from guidelines. Indications for histamine-2 receptor blockers (H2RAs) and no stress ulcer prophylaxis will also be considered. Following this analysis, targeted provider education with presentations, posters, and pocket-cards will be performed. Pharmacists rounding on each unit will reinforce appropriate

indications. After intervention on the pilot units, a follow-up MUE will be performed to determine the effectiveness of the program and future applicability in other inpatient units within the hospitals. This is a performance improvement project and is IRB exempt.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-311

Poster Title: Optimizing nicotine replacement therapy in Providence Southwest Washington Region inpatient facilities

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Purpose: Project team members aim to enhance patient care and community health by offering nicotine replacement therapy, including education, to admitted patients. Although available to most patients, there exists a potential inpatient population who may not be offered or provided such therapy during their hospital stay. To prevent nicotine withdrawal symptoms, increase patient satisfaction, and promote smoking cessation, it is important to offer nicotine replacement therapy to qualifying admitted patients and promote smoking cessation at discharge. This quality improvement project will assess opportunities for optimization and evaluate subsequent interventions related to provision of nicotine replacement therapy.

Methods: This quality improvement project is currently being reviewed by the Institutional Review Board (IRB) and data collection will begin once approval is received. Adult patients admitted to our inpatient facilities who are users of nicotine products will be included in the project.
A retrospective gap analysis will be performed in an attempt to identify opportunities for qualifying patients to receive access to nicotine replacement therapy while in the hospital. Following the gap analysis, pharmacists and nurses in selected areas of the hospital will cooperate with physicians to intervene and provide nicotine replacement therapy on behalf of patients when nicotine replacement therapy is warranted but not initially provided. Nicotine replacement therapy may include nicotine patches, gum, or lozenges, and patients will be offered materials and resources to support tobacco cessation post-discharge. This intervention process and any resulting changes to the quality of patient care will be documented. An

assessment including, but not limited to, reports of withdrawal symptoms, use of anti-anxiety medications, patient desire to continue with smoking cessation after discharge, and patient satisfaction will be performed retrospectively to evaluate the significance of increased access to nicotine replacement therapy. The information collected during this analysis may be used to construct a collaborative drug practice agreement between pharmacists and physicians within Providence Southwest Washington Region inpatient facilities.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-312

Poster Title: Incorporation of a pharmacist-led antimicrobial stewardship program in a skilled nursing facility

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Purpose: Antibiotics are typically the most frequently prescribed medications in long-term care facilities, and studies have shown that nearly 75 percent of these are unnecessary or inappropriate. Antibiotic misuse is a growing worldwide concern due to its association with bacterial antibiotic resistance and increasing healthcare costs. Recently, Centers for Medicare and Medicaid Services proposed that all skilled nursing facilities (SNF) begin implementing an antimicrobial stewardship (AMS) program that includes prescribing protocols and antimicrobial monitoring systems by the year 2017. This study will expand upon the current AMS services available at Providence St. Mary's Medical Center to include Regency skilled nursing facility.

Methods: The study will be submitted to the Institutional Review Board for approval. It will examine the implementation of an AMS program in a local SNF as a pilot for further implementation in the surrounding community. Baseline data was collected January 1, 2016 through August 31, 2016. The study will focus on residents diagnosed with urinary tract infections, pneumonia, and cellulitis, and who are prescribed fluoroquinolones, amoxicillin derivatives, clindamycin, cephalexin, metronidazole, sulfamethoxazole and trimethoprim, and oral vancomycin either prior to or after admission. The pharmacist will formulate recommendations for antibiotic therapy based on evidence-based infectious disease guidelines and discuss their recommendations with the physician overseeing the patient's care and the staff infectious disease nurse. The following data will be collected: hospital readmission rates due to infectious causes, antibiotic prescription choice, appropriate dose, frequency, and duration of therapy as primary endpoints. Clostridium difficile infection rates, total antibiotic

use, cost reduction, and perceived value of AMS education in-services will be evaluated as secondary endpoints of this study.

Results: NA

Conclusion: NA

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-313

Poster Title: Hospital IV room gap analysis for compliance with United States pharmacopeia general chapters &

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Purpose: United States pharmacopeia (USP) chapters < 797>& < 800> address sterile compounding practices and regulations. Chapters < 797> "Pharmaceutical Compounding – Sterile Preparations" and < 800> "Hazardous Drugs – Handling in Healthcare Settings" provide standards to ensure high quality product production, personnel safety, and public health and environmental protection. The IV compounding room at Providence St. Mary Medical Center (PSMMC) was recently approved for remodeling to bring it into compliance with these regulations. The study objective is to perform an IV room gap analysis to determine the extent of compliance with USP general chapters < 797>& < 800>, and ensure full USP compliance with both chapters upon remodel completion.

Methods: This study will be submitted to the Institutional Review Board for approval. The pharmacy quality assurance commission sterile compounding [USP < 797>] self-assessment compliance checklist from the Washington State Department of Health will be used to help create a gap analysis. Using the gap analysis, an initial assessment of the IV compounding practice will be conducted to identify areas of noncompliance. With a baseline established, policies, education, and work flow, will all be revised to help achieve full compliance with USP < 797> & < 800>.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 10-314

Poster Title: A retrospective study on postoperative spine surgery pain management in patients treated with liposomal bupivacaine

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Purpose: Liposome bupivacaine (LB) is a long-acting local analgesic in an encapsulated liposomal formulation developed with the goal of providing a longer duration of anesthesia compared to its counterpart bupivacaine hydrochloride (BH). LB was approved by the FDA in October 2011 for administration into a surgical site for postoperative analgesia in adults. At Providence St. Mary Medical Center, LB was approved for use in total knee and hip arthroplasty, and spinal surgeries. This study is a retrospective review of baseline data to analyze the effect of LB versus traditional local analgesia in spinal surgery patients on pain control and clinical outcomes.

Methods: This study will be submitted to the Institutional Review Board for approval. A literature search was performed on PubMed/Medline (January 2010 to July 2016) using the search terms: bupivacaine liposome, liposomal bupivacaine, and the brand name of LB. The literature search identified many studies involving total knee arthroplasty, hip arthroplasty and non-orthopedic surgical procedures. However, few studies have been published in evaluating the use of LB versus BH as a local anesthetic in spinal procedures.
This study will retrospectively examine patient baseline data in spinal surgeries without LB use at Providence St. Mary Medical Center (PSMMC) collected from September 2014 – April 2015, and in spinal surgery patients administered LB from April 2015 - July 2015. The pharmacy resident will conduct patient chart reviews in order to evaluate the data and analyze the effectiveness of LB in the following post-operative primary and secondary endpoints. The primary endpoints assessed in this study include: duration of pain control, patient's pain scores, use of rescue opiate pain medications, time to first rescue medication, and length of stay. The secondary endpoints assessed will include: adverse drug events and cost. Finally, the study will

partition the data between the different types of spinal surgeries to identify if certain surgeries have increased benefit with use of LB.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-315

Poster Title: Implementation of a pharmacist-led transitions of care service for medical oncology patients

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Purpose: Transitioning between care settings is a particularly vulnerable period for patients with complex oncology care needs. Breakdown in care is more likely to occur during this time, which could lead to increased hospital readmissions and poor patient outcomes. In 2013, Providence St. Mary Medical Center implemented a transitions of care (TOC) discharge process where the TOC pharmacist aids in transitioning patients with TOC diagnoses (myocardial infarction, COPD, pneumonia, heart failure, or total hip/knee arthroplasty) between care settings. This study will expand TOC services to oncology patients to help improve their overall health outcomes, increase provider revenue, and decrease hospital readmissions.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients from Providence St. Mary Regional Cancer Center (PSMRCC) will be identified upon admission by the clinical oncology pharmacist, TOC pharmacist, or PGY-1 resident. Only admitted patients from PSMRCC will be included in the study. Patients that are admitted with TOC diagnoses will be excluded. Once identified, admission medication reconciliation will be performed, and the patient will receive education regarding his or her diagnosis and medications. Upon discharge, the patient will receive discharge plan teaching. The clinical oncology pharmacist or resident will contact the patient via phone within two business days post-discharge. This follow up call will assess the patient's understanding of his or her admission diagnosis, review his or her health status, perform medication reconciliation, and answer any questions. Patients will also be re-educated about their oncology diagnosis, treatment plan, and any changes resulting from the admission. The clinical oncology pharmacist or resident will schedule the patient for a follow up visit with the oncologist within seven calendar days of discharge. The resident will

track service-related outcomes for these patients, and the clinical oncology pharmacist will track billed services.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-316

Poster Title: Collaborative care between a pharmacist and behaviorist to increase patient access to depression and anxiety management in a family medicine clinic

Primary Author: Shannon Kelly, Providence St. Peter Family Medicine, WA; **Email:** kelly.shannon@providence.org

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Purpose: Untreated symptoms of depression and anxiety are a major concern in primary care settings. Time constraints make it difficult for primary care providers to review both the pharmacotherapy and psychological treatment necessary for depression and anxiety symptom improvement. A pharmacist and behavioral health specialist working together can help relieve some of the burden on primary care providers and improve patient access to timely follow-up. The goal of this project is to increase patient access to care by having a pharmacist initiate or modify pharmacotherapy by utilizing a collaborative drug therapy agreement.

Methods: A three-month retrospective chart review will be completed to evaluate the time between an initial and follow-up appointment with a primary care provider for depression and/or anxiety. Following collection and evaluation of the background data, a pilot of the service will be conducted at a single family medicine clinic with limited primary care provider access. Patients included in this service will be those with a recent diagnosis or increase in symptoms of depression and/or anxiety, or patients experiencing side effects from depression or anxiety medication therapy, who have been referred to a pharmacist by the primary care provider. The pharmacist will initiate, modify, or discontinue pharmacological therapy for depression and anxiety under a collaborative drug therapy agreement, while the behaviorist will work with the patient to develop coping skills and identify community resources. Subsequent follow-up will include face-to-face meetings and telephone calls. The following data will be evaluated: time between follow-up appointments or phone calls, Patient Health Questionnaire-9 (PHQ-9) scores, Generalized Anxiety Disorder Questionnaire-7 (GAD-7) scores, and comorbid mental health diagnoses. Primary care providers will be surveyed pre- and post-

implementation to identify the perceived impact on patient care, access, and provider comfort level with managing depression and anxiety.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-317

Poster Title: Expansion of primary care health team education by pharmacists

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Purpose: In an era of healthcare reform, primary care is increasingly provided by multidisciplinary care teams. Healthcare professionals are caring for an aging population with increased complexity of medication therapy. A majority of physician office visits involve medication-related decision making, which requires vast knowledge of medication-related issues. New literature and medications are being released on a continual basis, and pharmacists are ideally equipped to help busy primary care providers and team members stay current on medication-related issues. To meet this need for continuing education that supports clinicians in providing collaborative and complex care, pharmacists are expanding and standardizing multidisciplinary healthcare education.

Methods: Survey data will be collected from clinic providers, leadership, and staff to assess current educational needs, logistical constraints, and satisfaction with existing continuing education opportunities. This data will be used to design an educational curriculum to be provided by pharmacists and piloted at six of 11 primary care clinics. Follow-up surveys evaluating satisfaction with available continuing education opportunities will be distributed after the pilot and will be used to measure the success of this service in improving the provision of continuing education in primary care clinics. This pilot will serve as a model for expansion of this education program by pharmacists to all primary care clinics in the region.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 10-318

Poster Title: Gap analysis assessing pharmacy consults in an inpatient palliative care service

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Purpose: The palliative care specialty focuses on life-limiting illness. Palliative care patients frequently present with complex disease states, symptoms, and medication regimens. However, provision of pharmacy services within palliative care is a new and emerging field. With medications playing a critical role in palliative care, pharmacy services may prove beneficial in this specialty. This project is designed to characterize pharmacy consults requested by palliative care and measure palliative care staff satisfaction with the integration of pharmacy services. Through this project, pharmacy consults will become standardized and streamlined. This project will promote efficient interdisciplinary collaboration and improve palliative patient care.

Methods: This quality improvement project will be submitted to IRB for review. The inpatient palliative care team will request pharmacy consults for specific patient cases. Consult requests are done via phone, staff message, or in person. Pharmacists will perform consults including, but not limited to, drug-interaction checking, dose optimization, titration/tapering schedules, converting between different administration formulations, follow up phone calls, hospice transition assistance, and general drug information questions. Pharmacy services will track these consults and categorize them. The results from tracking will be reviewed every 6 weeks to analyze request patterns. Palliative care staff will complete a satisfaction survey every 3 months to examine satisfaction with pharmacy services. This project is set to finish in June 2017.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-319

Poster Title: Optimizing antimicrobial stewardship of prescribers: An education based approach

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Purpose: The objective of this quality improvement project is to try to modify unnecessary antibiotic prescribing behavior with the implementation of an interactive, e-learning module while utilizing clinical patient cases. In addition, we hope to measure specific antibiotic usage data that correlates with each one of our patient cases to monitor for significant changes in antibiotic prescribing across Providence St. Peter Hospital and Providence Centralia Hospital.

Methods: This quality improvement project is pending approval by the Institutional Review Board. Patients 18 years of age or older who have been hospitalized and received an antibiotic during their admission will be analyzed retrospectively as an aggregate to see where antibiotic use has been inappropriate and patient cases will be developed to improve antimicrobial stewardship. While the e-learning module will be implemented for the new physicians hired, current physicians will be educated with an interactive presentation with similar patient cases. Subjective data will be collected from the current prescribers after the presentation regarding their thoughts on how the information affected their understanding of antimicrobial stewardship practices, appropriate antibiotic usage and if it will change their ordering habits in the future. Objective data will be collected before and after prescriber education and the e-learning module to assess for any statistically significant changes in specific antibiotic prescribing related to the patient cases.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-320

Poster Title: Opioid overdose prevention initiative at two regional hospitals: Determining the benefit of patient opioid overdose emergency response training and naloxone kit distribution

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Additional Author (s):
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Purpose: To address the need for preventing opioid overdose fatal events, Providence St. Peter and Providence Centralia hospitals in Washington state have adopted Collaborative Drug Therapy Agreements for pharmacists to prescribe and dispense naloxone to high risk patients. The objective of this quality improvement project is to assess the impact of this new initiative. The hypothesis of the project is that a hospital-based prescribing program for take-home naloxone and overdose education will decrease opioid overdose events and associated fatal outcomes (tracked by emergency department admissions for opioid overdose and county data).

Methods: This project is in the process of review by the Institutional Review Board (IRB) as a quality improvement project. Upon receiving IRB approval, data will be collected on patients receiving naloxone kits and opioid overdose education from a pharmacist from October 1, 2016 to March 31, 2017. These kits and education will be given to patients at two regional hospitals indicated as high risk of opioid overdose as outlines in the naloxone Collaborative Drug Therapy Agreement for the hospitals. Inclusion criteria include all eligible patients over age 18 years old indicated for naloxone and overdose education; exclusion criteria include any patients that decline a prescription/counseling or have a contraindication to naloxone. All pharmacists, trained on naloxone and education workflow, will identify these patients, open intervention documentation in patient charts, write prescriptions for naloxone to the hospital outpatient pharmacy, and then provide the medication and counseling to the patient during an emergency department or inpatient admission. These patients will then have information entered into a secure datasheet for tracking of readmissions for opioid overdose in the following 30 days and

90 days post-intervention. Analysis of the total number of hospital admissions for overdose before and after the intervention, county data on opioid overdose deaths, and cost analysis of cost benefit/impact of the service will be performed for evaluating the impact of this quality improvement project.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-321

Poster Title: Causes of 30-day re-admission in congestive heart failure patients and patient-specific interventions in two acute care community hospitals

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Purpose: Project team members aim to enhance patient care for re-admitted heart failure (HF) patients by providing root cause analysis for 30-day readmission. The interdisciplinary team has been tracking 30-day readmission rates but root causes for these readmissions are not currently being tracked. To further prevent readmissions of HF patients, it is important to fully understand the reasons for readmission. Detailed description of the causes of HF readmission are lacking and gaining insight on this can be helpful in optimizing management of these patients.

Methods: This quality improvement project is currently being reviewed by the Institutional Review Board (IRB) and data collection will begin once approval is received. HF patients who have been re-admitted within 30 days of discharge with a primary diagnosis of congestive heart failure exacerbation will be included in the project. Data will be collected retrospectively through electronic medical record review via Epic. Data collected will primarily focus on investigating the reasons for readmission. 30-day readmission information will also be available to the entire interdisciplinary team through the “flowsheets – readmission information” functionality in Epic. The team can use this information to further assess appropriate interventions for readmitted patients. Assessment of 30 day all-cause readmission rates and comparison of patient interventions done during previous admit and current admit will be performed retrospectively to evaluate the significance of knowing the root causes of 30-day readmission of HF patients.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-322

Poster Title: Collaboration to improve hospital and poison center documentation in intravenous lipid emulsion cases

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Purpose: Intravenous lipid emulsion (ILE) is a potential salvage therapy for patients who have not responded to conventional treatments for acute overdose of many substances. This treatment option has become increasingly popular as evidenced by frequency of case report publication. Guidelines published in 2016 gave only neutral recommendations for use as part of standard treatment modalities and highlighted limitations in the available data. The intent of this quality improvement project is to further characterize the effects of ILE in acute overdose and to improve documentation of the effects by the local poison center.

Methods: This project is awaiting IRB designation as a quality improvement initiative. This is a retrospective, sequential case series of all cases of ILE used for overdose in 2 community hospitals since these hospitals have been on their current electronic medical record system. Patients receiving intravenous lipids strictly for nutritional support, receiving ILE for local anesthetic toxicity, and those receiving ILE for completely unknown toxin ingestion will be excluded. After identification of patient cases, the following data will be extracted from both hospital medical records and when available, from poison center documentation: patient age, sex, weight, comorbidities, suspected or actual toxin(s) and dose(s) ingested, other treatments given for the overdose, response to ILE (hemodynamic, charted clinical observations, electrocardiographic), lab values associated with the ingestion and ILE, and patient outcomes. Data will be summarized using descriptive statistics in an attempt to identify trends in onset of effect of ILE and identify positive (improvement in vital signs or laboratory values) or negative effects (interference with labs, pancreatitis, and inability to initiate other supportive therapies).

Documentation in both systems will be compared to identify areas for future improvement in the specific data collected by the poison center. Additionally, data will be used to educate emergency department providers throughout our regional hospital system, to develop internal guidelines for our hospital, and to guide use with the local poison center.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-323

Poster Title: Pharmacist involvement in new post-discharge clinic targeting patients at high risk of readmission

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Purpose: Reducing hospital readmissions is a goal for many healthcare systems, as reimbursement rates have recently changed based on hospital-specific readmission rates. A new post-discharge clinic will serve patients in Olympia, Washington who are unable to be seen by their primary care provider (PCP) in a timely manner after hospital discharge. The purpose of this project is to attempt to justify pharmacy's involvement in the post-discharge clinic, determine the scope of involvement, and work to identify the most efficient and efficacious workflow model for patient visits. The ultimate goal of this project is to reduce high-risk hospital readmission rates.

Methods: The project team will determine criteria which constitutes high readmission risk. These criteria will be applied to inpatients at Providence St. Peter Hospital in order to prioritize need and ensure efficient and appropriate patient selection for referral to the post-hospitalization visit (PHV) clinic. Financial and market analyses will be performed to justify pharmacy's involvement within the clinic. The scope of pharmacy's involvement will be determined based on available resources and results from background research. A visit template will be created, to allow the healthcare provider to track interventions and systematically document clinic visit interventions. An analysis of these interventions will be performed by the project team. Results from this analysis will be used to justify pharmacy's continual involvement within the clinic. Baseline 30-day hospital readmission rates will be collected and compared to 30-day hospital readmission rates after the opening of the PHV clinic.

Institutional Review Board (IRB) approval is pending for this quality improvement project. The results of this project will be presented at Western States Conference, to medical staff at a continuing education meeting in the spring of 2017, and compiled as a manuscript with the intention of submission for publication.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-324

Poster Title: Pharmacist-led protocol to reduce empiric fluoroquinolone use for urinary source infections in the acute hospital setting

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Purpose: Fluoroquinolone antibiotics are often ordered during acute hospitalizations to treat uncomplicated urinary tract infections (UTI). A 2016 FDA review found that, compared to other antibiotics, fluoroquinolones carry a much higher risk for permanently disabling adverse events such as peripheral neuropathy and tendon rupture. Additionally, fluoroquinolones are known to increase the risk of Clostridium difficile infection (CDI) as compared to other antimicrobial agents, such as first generation cephalosporins. The purpose of this project is to develop a protocol to limit the use of empiric fluoroquinolones for UTI by substituting ceftriaxone or cefazolin in the interim period until cultures result.

Methods: This project will be submitted to the Institutional Review Board for approval. Pre-intervention data will be collected retrospectively from the months of May to June, 2016. Patients 18 years or older admitted to Saint Joseph Medical Center with a fluoroquinolone ordered for a urinary source infection will be included in the study. Exclusion criteria include diagnosis of severe sepsis/septic shock, pyelonephritis, hospitalization within the past 90 days, nursing home residency, hemodialysis, immunosuppression, and known hypersensitivity to intervention antibiotics. Based on the results of the retrospective data, a protocol will be developed to reduce empiric fluoroquinolone use for urinary infections. Education to the medical and pharmacy staff will be conducted prior to protocol implementation, as well as periodically during the intervention period. Post-protocol intervention data will be collected in the same manner. The primary endpoint is the percentage reduction in empiric fluoroquinolone use for urinary tract infections. Secondary endpoints include length of hospital stay, total

antibiotic days, incidence of CDI, and total number of antibiotics used during the hospitalization.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-325

Poster Title: Pharmacist's formal role in a team-based approach to opioid abuse mitigation in the emergency department

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Michael Li

Purpose: Prescription opioid abuse has become increasingly detrimental to numerous aspects of healthcare in the United States. Patients who abuse these medications suffer serious consequences, including unnecessary emergency department visits and even death. At the front line of this epidemic, emergency department pharmacists can provide an essential role in managing symptoms from opioid withdrawal and providing long-term treatment options. The implications behind preventing emergency department re-admissions due to opioid abuse are increased patient safety and decreased healthcare-related costs. The objective of this study is to provide treatment for patients who abuse opioids and prevent emergency department re-admissions.

Methods: Patients who abuse opioids will be identified in the emergency department by comparative data including emergency department visits, narcotic prescription utilization, or self-admittance. These data can be found in the Prescription Monitoring Program and the Emergency Department Information Exchange. Once identified and screened, the pharmacist, nurse care manager, and physician will provide the patient with education on the dangers of opioid abuse and the options for symptom management and addiction treatment. Medications for symptomatic relief will be provided along with treatment referral options. Retrospective patient data will then be collected, documented, and compared to follow-up prospective data using the patient prior to intervention as their own control. The primary outcome will be a comparison of emergency department visits before and after the intervention. Secondary outcomes will be post-intervention opioid utilization, number of naloxone prescriptions written, and patient satisfaction based on a short survey assessing the effectiveness of the intervention.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-326

Poster Title: Impact of formal Pharmacist-driven education and intervention to encourage single-Pseudomonas coverage for hospital-acquired pneumonia

Primary Author: Melissa Ferguson, St. Joseph Medical Center, WA; **Email:** melissaferguson@chifranciscan.org

Additional Author (s):
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Purpose: In recent years, antimicrobial stewardship principles have been heavily promoted throughout health-systems across the country in response to increasing rates of multidrug-resistant pathogens, antibiotic-associated superinfection, and a paucity of new antimicrobial agents introduced to the market. Pharmacists have the opportunity to influence prescriptive practices through formal education and specific therapy recommendations. This project is designed to assess the impact of pharmacist-led provider education and interventions to minimize the usage of double-Pseudomonas coverage in patients without specified risk factors for hospital-acquired pneumonia (HAP) patients, as recommended by the 2016 IDSA Hospital-acquired Pneumonia guidelines.

Methods: Formal education on the guideline-based updates to empiric HAP therapy will be presented to providers at the monthly hospitalist meeting at St. Joseph Medical Center by means of a PowerPoint presentation and a summative handout. Following education, patients admitted for >48 hours with an indication of pneumonia or sepsis entered for antibiotic orders will be screened by pharmacists. Patient exclusion criteria are: IV antibiotic use within the previous 90 days, structural lung disease, history of Pseudomonas infection, ventilator support required due to pneumonia or septic shock, or known history of Pseudomonas infection. If a patient with identified HAP does not meet any exclusion criteria, a standardized therapy recommendation will be made by pharmacists to providers via text page. The primary endpoint is the number of patients, n (%) initiated on single-Pseudomonas coverage or therapy was narrowed to single-coverage directly as a result of pharmacist intervention. Secondary endpoints will be derived from an objective Variance Report, designed to identify patterns in

guideline-based prescribing practices within the provider groups. The control group will be patients meeting criteria treated for HAP from the date the IDSA guideline was published until the date of provider education. The subjective impact of education will be assessed by likert-scale surveys distributed to providers immediately following the formal education, and again at the conclusion of the intervention period.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-327

Poster Title: Implementation of a medication therapy management program within the patient-centered medical home

Primary Author: Jessica Chung, St. Joseph Medical Center, WA; **Email:** jessicachung@chifranciscan.org

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Purpose: Eligible Medicare Part D beneficiaries within the Catholic Health Initiatives Franciscan patient-centered medical home (PCMH) are enrolled into a medication therapy management program (MTM) where they may receive an annual comprehensive medication review (CMR) and ongoing targeted medication reviews (TMR). The goals include improving the patient's knowledge of their prescribed medications, identifying and addressing any discrepancies related to their medications, and ultimately ensuring optimal therapeutic outcomes. The objective of this study is to provide MTM services to demonstrate improved outcomes within chronic disease state management and to evaluate the return on investment generated upon reimbursement of these services.

Methods: Patients that are managed within the PCMH clinic will be identified as eligible for an MTM through the OutcomesMTM Connect Platform and will receive an offer for a CMR. A resident or clinic pharmacist will perform the CMRs and provide patients with a personalized medication action plan and updated medication list. If the pharmacist has identified interventions or recommendations about change in therapy that will require physician approval, then the pharmacist will first discuss these potential changes with the patient to assess for willingness and then contact the primary care physician. The primary endpoints assessed will include number of successful CMRs/TMRs completed and the implementation of pharmacist CMR/TMR workflow within the PCMH clinics and subsequent evaluation of return on investment generated with each visit. Secondary endpoints to be assessed include goal achievement of disease state management targets such as hemoglobin A1c, blood pressure levels, serum low-density lipoprotein, and heart failure readmissions; number of pharmacist interventions and/or recommendations; number of patients referred to pharmacist for disease

state management; number of pharmacy interventions accepted by the provider; and patient and/or provider satisfaction with pharmacist involvement with MTM related care. The timeline of the project will occur from October 2016 through March 2017 with an ongoing plan to support MTM and ongoing implementation into scheduled pharmacist workflows. This project is exempt from approval by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-328

Poster Title: Implementation of a 48-hour antibiotic review

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Purpose: According to the Centers for Disease Control and Prevention , 20-50 percent of antibiotics prescribed in U.S. hospitals are unnecessary or inappropriate. The misuse and overuse of antibiotics has led to increased prevalence of antibiotic-resistant bacteria. Antibiotic-resistant bacteria and serious side effects, such as Clostridium difficile infection, pose patient safety and public health concerns. The Joint Commission recently released new antimicrobial stewardship requirements to help reduce the use of unnecessary antimicrobials. These requirements include a mandate for antibiotic review after 48-hours. The objective of this project is to establish standardized policies, procedures, and education for the implementation of this review.

Methods: This project will be submitted to the Institutional Review Board for approval. All patients age 18 years and older, admitted and started on cefepime, ceftazidime, meropenem, or piperacillin-tazobactam will be included. Eligible patients will be identified at 48 hours of antibiotic use, using the electronic health care record. Policies, procedures, and education will be developed based on primary literature and best practice standards. Medical and pharmacy staff will be educated on the 48-hour antibiotic review process. The primary outcome will be implementation of the 48-hour review workflow. Secondary outcomes include frequency of accepted interventions, pharmacy and medical staff satisfaction, and change in antibiotic duration. Antibiotic duration will be evaluated and compared to data from a 6 month time period prior to implementation of the new practice model.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-329

Poster Title: Implementation of a collaborative practice model for oncology pharmacists in a gynecologic oncology clinic

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Purpose: Oncology pharmacists are an integral part of the outpatient infusion center and inpatient cancer care team at St. Joseph Medical Center, but are not yet heavily integrated into the oncology clinic setting. The objective of this study is to develop and implement a practice model to enhance the oncology pharmacists' involvement in chemotherapy treatment planning and ongoing management of patients in the Franciscan Gynecologic Oncology Associates clinics. Anticipated benefits include improvement of both patient and provider satisfaction and the potential to generate revenue for the clinical services provided by the oncology pharmacist.

Methods: This study will be submitted to the Institutional Review Board for approval. All gynecologic oncologic patients seen by included providers at the Franciscan Gynecologic Oncology Associates clinics will be referred to the oncology pharmacist for an initial assessment and ongoing management throughout chemotherapy. The pharmacist will order the necessary laboratory tests and schedule patients for an initial face-to-face pharmacist visit in the physician's clinic, which will enable the pharmacist to tailor supportive care needs to the individual patient. The initial visit will encompass medication reconciliation, screening for potential drug-drug interactions, evaluation of laboratory tests, chemotherapy education, and education regarding the management of potential side effects. The pharmacist will continue to follow referred patients throughout the course of their therapy and schedule follow up-visits as needed to manage chemotherapy-induced side effects. The following data will be collected: number of referrals received, patient satisfaction, provider satisfaction, type and quantity of recommendations made and accepted by the providers, and revenue generated by oncology

pharmacists. Additional data that will be tracked includes patient age, gender, type of cancer, and chemotherapy regimen.

Results: NA

Conclusion: NA

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 10-330

Poster Title: Opiate Ordering, Prescribing and Education Prior to Discharge

Primary Author: Kristine Gillas, St. Peter's Hospital Olympia, WA, WA; **Email:** kristine.nguyen@providence.org

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Purpose: Over the past several decades providers were trained to treat pain as the fifth vital sign. Research and studies stated that opioids, when used to treat pain, had a very low incidence of addiction. However, over the past few years new research has emerged showing that opioids have a high potential for dependence, addiction and abuse. This has left prescribers unsure of how to best treat their patients' pain. This quality improvement project aims to determine best practices surrounding opioid discharge prescriptions.

Methods: A chart review of patients who were prescribed opioids at discharge from our facility will be performed to review patient's pain level and opioid need while in-patient. Assessments will be done to determine if the amount of opioids prescribed exceeded doses patients were receiving while in-patient, were similar to what they were receiving in-patient with a reasonable taper schedule, or were inadequate compared to what they were receiving while in-patient.
Trends in prescribing, areas for improvement and points of reeducation will be identified. Additionally, concierge filling of prescriptions by our outpatient pharmacy will be offered to patients undergoing planned surgeries. This is intended to reduce the number of pre-surgery prescriptions and lead prescribers to write for quantities reflective of the amount of pain and progress the patient is making.
Data will be collected from pre-intervention and post intervention time periods and assessed to see what, if any, impact the interventions had on the quantity of opioids prescribed.

Results: NA

Conclusion: NA

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-331

Poster Title: Evaluating the impact of clinical pharmacy services on diabetes management within four primary care clinics

Primary Author: Karen White, Swedish Medical Center, WA; **Email:** karen.white4@swedish.org

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Purpose: Swedish Medical Group (SMG) consists of 30 + clinics across the Seattle area. Historically, there has been minimal pharmacy involvement within the medical group. Since 2014, pharmacy presence has grown from one to five pharmacists each working in single SMG clinics. Pharmacist responsibilities in the clinics include, but are not limited to, drug information consults, transition of care management, and chronic disease management (diabetes, hypertension, lipids, etc). The impact of these clinical pharmacy services has yet to be assessed. This study aims to quantify the impact of SMG clinical pharmacy services and specifically focuses on changes to diabetes management.

Methods: The following study design will be submitted to the International Review Board for approval. Patients will be retrospectively identified for study inclusion if they were referred to the clinical pharmacist for diabetes management and have had at least 3 follow-up visits with clinical pharmacist within a 4-month period from the dates of June 1st 2015 to September 28th 2016. Patients will be excluded if they did not have follow-up labs since the initial pharmacist contact. Charts will be reviewed retrospectively. Data to be collected will include initial A1c, follow-up A1c values, number of pharmacist visits (in-person or telephone), aspirin therapy, angiotensin-converting enzyme inhibitor therapy, statin therapy, average blood pressure (BP) prior to pharmacist contact (defined as average of 3 office visit BP values prior to initial pharmacist contact), final BP value average (defined as average of most recent 3 office visit BP values), pertinent vaccine history, and initial and final diabetes medications (by pharmacological drug class) from start of pharmacist contact to end of pharmacist contact. Patient data will be de-identified and stored on secure; hospital approved devices.

Results: NA

Conclusion: NA

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-332

Poster Title: The Evaluation of Tocilizumab for Cytokine Release Syndrome in Chimeric Antigen Receptor T-Cell Patients.

Primary Author: Courtney Bishop, The University of Washington Medical Center, WA; **Email:** cbbishop@uw.edu

Additional Author (s):

Purpose: Chimeric antigen receptor (CAR) specific for CD19, a B-cell specific antigen expressed on normal and malignant cells, is a promising new strategy for relapsed/refractory B-cell malignancies. Patients may develop cytokine release syndrome (CRS) due to T-cell activation and release of inflammatory mediators, which can be manifested as fever, hypotension, capillary leak, coagulopathy, and neurotoxicity. IL-6 receptor blockade with tocilizumab has been effective to reduce symptoms without dampening the response of CAR T cell expansion. We seek to characterize patients who developed CRS and received tocilizumab with or without dexamethasone at our institution and its clinical effects in these patients.

Methods: This is a retrospective case series of patients treated with tocilizumab for CRS as a result of CAR T-cell therapy at The University of Washington Medical Center. Data will be collected from the electronic medical record and will include: patient demographics (gender, age); dose of CAR t-cells; malignancy; dose of tocilizumab; ferritin; CRP; IL6; LDH; oxygen requirement; vasopressor support; serum creatinine; liver function tests; CRS grade; fibrinogen; date of CAR t-cell infusion; date of tocilizumab and/or corticosteroid administration; blast percentage prior to t-cell infusion; and death (if applicable). Descriptive data will be used to describe results.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 10-333

Poster Title: Comparison of two training methods and their effect on immunization delivery in community pharmacy: Project VACCINATE

Primary Author: James Lin, University of Washington / QFC Pharmacy, WA; **Email:** jlin1709@yahoo.com

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Purpose: Identifying effective training strategies for community pharmacy is critical to expanding patient care services in this setting. Project VACCINATE is a demonstration project in Washington State aimed at increasing adult immunizations administered in and state registry documentation by community pharmacies. The objective of this project, a subset of Project VACCINATE, is to compare the effects of live training strategy versus a train-the-trainer strategy on (1) influenza, pertussis, herpes zoster, and pneumococcal vaccines administered to adults 18 years and older; (2) training costs and immunization revenue; and (3) pharmacist and technician knowledge and confidence in a supermarket chain community pharmacy organization.

Methods: This demonstration project is taking place at eight high performing supermarket chain community pharmacies in Seattle. These eight pharmacies were matched based on immunization sales and performance and sorted into 2 groups. Four pharmacies had all staff pharmacists and technicians attend a 2 hour live training session. The other four pharmacies received a train-the-trainer strategy where one pharmacist and one technician champion attended the live 2 hour training and then returned to their pharmacy to train their complete staff. The number of immunizations administered and revenue generated at each pharmacy will be obtained from pharmacy dispensing records every two weeks post training. Training costs will be derived from both the direct paid time to bring staff to training sessions and the total logged time for the pharmacist and technician champion to train staff members. Training costs will be tallied after the train-the-trainer groups fully train their staff. Knowledge and confidence will be assessed using standardized confidence scales and knowledge exams. These confidence and knowledge assessments were administered before and after the live training sessions and

will also be administered to staff trainees in the train-the-train group before and after training. A repeat set of assessments will also be administered every month afterwards. All data will be analyzed using descriptive statistics and then combined to compare the effects of the two training strategies.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-334

Poster Title: Evaluation of resource utilization of immunotherapy checkpoint programmed death receptor-1 (PD-1) and cytotoxic T-lymphocyte-associated protein (CTLA-4) inhibitors for patients with advanced sarcomas

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Purpose: There has been a dramatic improvement in the rate and disease-free survival in patients diagnosed with sarcoma since the 1970s, from previous mortality rates of 80-90% with the addition of multimodal therapy including surgery, chemotherapy radiotherapy. However, despite previous advancements there has been a plateau in overall prognosis for sarcoma patients; alternative and more effective options are needed. Recent success of immune checkpoint inhibitors such as PD-1 and CTLA-4 antibodies in melanoma, renal cell carcinoma, prostate, colorectal and non-small cell lung cancer has triggered exploration of these agents in other diseases such as sarcoma.

Methods: Retrospective chart review will be performed for patients diagnosed with advanced sarcoma receiving care at the Seattle Cancer Care Alliance (SCCA) in Seattle Washington from August 1, 2015 to September 28, 2016. Patients will include those 18 years or older with a diagnosis of advanced sarcoma and must have applied for patient assistance to receive an immunotherapy checkpoint inhibitor regimen. The primary objective of this analysis is to quantify the amount of time and resources being used for awarding patient assistance of checkpoint inhibitors, specifically PD-1 and CTLA-4 antibodies, in opposition to last lines of treatment including end of life care in patients with advanced sarcomas. We will specifically examine the number of requests for these immunotherapies compared to actual new initiations of therapy. We will work with our patient assistance coordinator to obtain hours and resources involved in the award of patient assistance for each patient for each targeted agent, time between initiation of patient assistance to initiation of therapy and determine if the total time and resources spent are a wise allocation of institutional resources. Secondary objectives of the

study are to document line of therapy, total time spent on PD-1 and CTLA-4 antibody therapy, time to death after initiating therapy if applicable and toxicities experienced by the patients receiving the antibodies.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-335

Poster Title: Improving medication self-efficacy in patients at high risk for readmission

Primary Author: Crystal Zhou, UW Medicine, WA; **Email:** crystalzhou88@gmail.com

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Purpose: The objective is to evaluate the impact of primary care clinical pharmacist interventions through monthly clinic visits on patients' medication self-efficacy, using the MUSE (medication understanding and use self-efficacy) scale, a validated tool. Specifically, this study aims to increase medication self-efficacy in patients at high risk for readmission, as identified by the LACE (length of stay, acuity, comorbidities, emergency department visits) index. A secondary aim is to determine the difference in improvement of MUSE score stratified by LACE index of 10-13 and >13. An additional exploratory aim is to compare improvement in MUSE score in English versus non-English speaking patients.

Methods: This is a single-center, prospective study capturing adult patients recently discharged from the hospital with LACE index ≥10. Patients who have had clinical pharmacist visits within the past 12 months and live in a long-term care, skilled nursing or assisted facility will be excluded. Patients admitted for oncological, mental health, or surgery diagnoses will be excluded as well. After obtaining informed consent, patients will be scheduled for 3 face-to-face visits over 3 months with the clinical pharmacist in their primary care clinic for monthly comprehensive medication reviews which will also assess control of chronic disease states such as diabetes, hypertension, dyslipidemia, asthma, or chronic obstructive pulmonary disease. The MUSE survey will be administered at visits 1 (baseline) and 3 (post-intervention). Patient demographics and clinical characteristics will be collected from the electronic medical records. The primary outcome is change in MUSE score from baseline in all patients. Secondary outcomes include change in medication adherence based on refill history and hospital readmission rates. Additional analyses include comparing the change in MUSE score stratified by LACE 10-13 and >13 and between English and non-English speakers. Student's t-test will be

used to determine the change in MUSE score; Pearson's chi-square test will be used to determine change in adherence and readmission rates.

Results: n/a

Conclusion: n/a

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-336

Poster Title: A retrospective evaluation of the efficacy and toxicities observed with palbociclib in breast cancer patients

Primary Author: Alan Chin, UW Medicine, WA; **Email:** alanchin@uw.edu

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Purpose: The primary objective of this study is to assess the duration of therapy and clinical response of patients taking palbociclib for hormone-receptor positive metastatic breast cancer in patients that have also received everolimus for treatment of hormone-receptor positive metastatic breast cancer. Additional objectives include assessing hematologic toxicities and subsequent dose adjustments associated with palbociclib at monthly intervals. This study will benefit the institution by examining prescribing practices and providing additional guidance for monitoring patients receiving palbociclib.

Methods: This study will be submitted to the Institutional Review Board for approval. Subjects for this study will be identified using the pharmacy database to search for patients prescribed both palbociclib and everolimus between August 31st 2013 through August 31st 2016 at the Seattle Cancer Care Alliance. Patients who never received everolimus at any point in their treatment history will be excluded. The anticipated total number of patients to be included in this study is between 60-100. The following data will be collected for patients through online chart review of the electronic medical record: age, sex, hormone receptor (HR) status, HER2 status, menopausal status, date palbociclib initiated and stopped, length of treatment with palbociclib, reason why palbociclib stopped, line of therapy of palbociclib, hormone treatment while on palbociclib, changes to hormone therapy while on palbociclib, date everolimus initiated and stopped, length of treatment with everolimus, and toxicities associated with palbociclib therapy such as hematologic abnormalities (neutropenia and thrombocytopenia). The collected data will be used to determine the following: median length of therapy with palbociclib in patients who previously received everolimus compared to patients who never

received everolimus prior to starting palbociclib, rate of dose reductions of palbociclib and if dose reductions were in accordance to recommendations from the package labeling. The data will be analyzed using descriptive statistics by the investigators.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-337

Poster Title: Development of a procedure and evaluation of the effect of switching patients from long-acting insulin to insulin NPH

Primary Author: Stephen Ueng, UW Medicine, WA; **Email:** sjueng@uw.edu

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Purpose: To develop and implement a procedure for switching patients from long-acting insulin to insulin neutral protamine Hagedorn (NPH) and to evaluate its safety and efficacy.

Methods: Phase I: A retrospective evaluation of patients' control of diabetes.
Those with type 2 diabetes mellitus currently insulin seen by a clinic pharmacist in the past 6 months (April 2016 – September 2016) will be eligible. They will be identified through EMR reporting.
Data to be collected include:
- Age, gender, race, BMI
- Antidiabetic medications
- Hemoglobin A1c

Phase II: Implementing a process to switch insulin.
Will assess a process for patients seen by clinic pharmacists to switch from long-acting insulin to insulin NPH. A standardized process will be developed for the pharmacist to assess hypoglycemia at every visit.
Phase III: A retrospective evaluation of safety and efficacy.
Those with type 2 diabetes mellitus currently insulin seen by a clinic pharmacist in the past 6 months (November 2016 – April 2017) will be eligible. The safety and efficacy of the procedure to switch from long-acting insulin to NPH will be assessed by looking at any changes in A1c as well as episodes of hypoglycemia. Potential financial benefits will also be examined.
Data to be collected include:
- Age, gender, race, BMI
- Antidiabetic medications
- Hemoglobin A1c

- Episodes of hypoglycemia determined through standardized process

Results: n/a

Conclusion: n/a

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-338

Poster Title: Evaluation of appropriate renal dosing of zoledronic acid in breast and genitourinary cancer patients with metastases to the bone.

Primary Author: Amy Ly, UW Medicine, WA; **Email:** amyl2813@uw.edu

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Purpose: The primary aim of this study is to identify the proportion of patients appropriately dosed with zoledronic acid based on renal function in patients with breast and genitourinary cancer with metastases to the bone. Data will also be gathered to evaluate the frequency of hold parameters in the order for zoledronic acid, and to identify the incidence of hypocalcemia in patients who are not appropriately dosed with zoledronic acid based on renal function.

Methods: General study design: Retrospective, descriptive study to identify the proportion of appropriately dosed zoledronic acid based on renal function
Data Collection: Retrospective chart review on approximately 100 patients between January 01, 2015 to August 31, 2016. Data will be collected from the billing department and chart review.
Inclusion criteria: Patient's with a diagnosis of metastatic breast or prostate cancer with lesions to the bone who receive an initial dose of zoledronic acid for management of metastases to the bone between January 01, 2015 and August 31, 2016. Subsequently, zoledronic acid must be ordered for an every 3-6 week schedule (range of dosing to allow for flexibility of scheduling to align with concomitant chemotherapy orders).
Exclusion criteria: Patients who are receiving zoledronic acid for an indication of hypercalcemia.

Results: Results and conclusion pending.

Conclusion: Results and conclusion pending.

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 10-339

Poster Title: Assessment of inpatient pharmacy medication costs over six months to determine opportunities for clinical interventions and cost savings

Primary Author: Laura Lavezo, Virginia Mason Medical Center, WA; **Email:** laura.lavezo@virginiamason.org

Additional Author (s):
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Purpose: As the cost of medications continues to rise annually, it is imperative for inpatient pharmacies to have an understanding of how money is currently being spent on medications for use in the hospital. Pharmacists can have a significant role in analyzing medication costs and utilization patterns in order to optimize high cost medications to reduce overall medication expenditure while providing safe and appropriate care. The purpose of this study is to identify high cost medication usage trends over the past six months and investigate opportunities for evidence-based clinical interventions to decrease either cost or usage.

Methods: Six months of inpatient medication expense data was provided for a cost-review analysis. Medications were sorted into medication categories according to Cerner software. Information on monthly total costs and total number of doses dispensed was sorted using pivot tables in Microsoft Excel. The six month data was analyzed to find consistencies and variations in spending and utilization over time. Medications were excluded from analysis if only used by a single patient or if the medication was a non-formulary medication. Medications with a monthly cost of over ten thousand dollars, medications with a single-dose cost of over five thousand dollars, or medications that had the potential to not follow current evidence-based practices were targeted for further investigation. This information will be reviewed from a clinical standpoint to determine what areas of opportunities exist to improve medication use and in the inpatient setting. Additionally the data will be used to identify opportunities for medication cost-savings in the inpatient setting. In the future, the information gained from this study will be utilized to analyze prescribing patterns with providers.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 10-340

Poster Title: Evaluation of pharmacist involvement on an interdisciplinary team for the management of chronic nonmalignant pain in an ambulatory clinic setting

Primary Author: Lena Perry, Yakima Valley Memorial Hospital, WA; **Email:** lenaperry@yvmh.org

Additional Author (s):
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Purpose: In a response to the marked increase of opioid prescriptions and the parallel increase of opioid related deaths over the last decade, the Center for Disease Control and Prevention recently published guidelines for prescribing opioids for chronic pain outside of active cancer treatment, palliative care, and end of life care. These guidelines are intended to optimize care and improve safety among chronic pain patients in outpatient settings. The purpose of this study is to evaluate outcomes after the implementation of pharmacist involvement in the care team for patients in a moderate to high risk group in an ambulatory clinic setting.

Methods: This study is currently pending approval by the institutional review board. An opioid registry, provided by a project funded through a government grant, will be used to identify patients receiving two or more opioid prescriptions over a 90 day period. Pharmacists and pharmacy students will calculate morphine equivalent doses (MED) for each patient using a state approved online calculator. Patients will be stratified according to their risk of overdose and opioid use disorder. The predefined MED scores include, high risk (>90 MED), moderate risk (50-90 MED), and low risk (< 50 MED) groups as described by the health system's physician opioid prescribing protocol. For patients categorized as moderate or high risk, a pharmacist will evaluate the statewide Prescription Monitoring Program (PMP) and random urine drug screens for signs of potential abuse. Assessments for opioid related adverse side effects and drug interactions will be made through patient interviews. Pertinent results and recommendations will be triaged to physicians based on level of significance. Metrics for efficacy of pharmacist involvement will include: the number of patients evaluated by the pharmacist, time spent to complete each evaluation, recommendations made by the pharmacist for the provider,

decrease in MEDs per patient, patient perspective of pain management and functional status, and potential cost savings.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-341

Poster Title: Implementation of a Pharmacist-Led Chronic Disease Management Program in a Primary Care Clinic

Primary Author: Pearce Engelder, Yakima Valley Memorial Hospital, WA; **Email:** pearceengelder@yvmh.org

Additional Author (s):
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Purpose: Chronic disease management is imperative to minimizing long-term and irreversible complications. Rural areas, like Yakima, Washington, are often plagued by a shortage of primary care providers. This shortage of primary care providers makes it difficult for current providers to appropriately monitor their patients with chronic diseases. To improve the quality of care and frequency of follow-up for patients with chronic diseases, a chronic disease management pharmacist will be integrated as part of the primary care team within the Memorial Family of Services primary care clinics.

Methods: This study will be submitted to the Institutional Review Board for review as exempt status. Collaborative drug therapy agreements will allow a full-time pharmacist the ability to order labs and prescribe medications for the following chronic diseases: asthma, chronic obstructive pulmonary disease, diabetes, hypertension, and hyperlipidemia. Patients will be referred to the pharmacist by their provider for disease management. A secondary referral process will be utilized to refer patients to the pharmacist based on clinic records of the patient's prior disease control or with evidence of a recent disease-related hospital admission. The pharmacist's time will be divided between forty minute initial visits, twenty minute follow-up visits, and follow-up phone calls. Phone calls will be used for the following: assess effects of new drug regimens, adjust dosing and frequency of new medications, provide additional education, and perform motivational interviewing as warranted by the clinical scenario. Visits will be billed using established office patient Evaluation and Management Current Procedural Technology codes 99213, 99214, and 99215. Continuous metrics will be set up to allow the pharmacist to monitor impact on patient's disease control in relation to chronic disease

management guidelines and provider-set goals. Other measurements will include time spent per patient, number and type of interventions, and reimbursement rate will also be evaluated to determine sustainability of pharmacist involvement.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 10-342

Poster Title: Development and implementation of a clinical pharmacy supportive care services within an outpatient oncology center

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Vicky

Purpose: Chemotherapy toxicities are common in cancer patients and cause significant symptom burden and decreased quality of life. Supportive care services are vital for caring for patients through the continuum of care. Literature supports utilization of pharmacists in managing supportive care regimens. Our site was chosen by Centers for Medicare and Medicaid Services to participate in the Oncology Care Model which entails pharmacist involvement in patient care with expanded prescriptive authority. The purpose of this study is to implement and evaluate the pharmacist-led, collaborative method of care delivery and measure improvement in patient outcomes, decreased costs, and increased access of care.

Methods: A team consisting of the clinical pharmacist director, chief medical director and pharmacy resident will develop a pharmacist-managed oncology supportive care clinic. A retrospective chart review will be conducted to assess appropriateness of supportive care regimens prior to clinical pharmacist intervention. A detailed business plan and prescribing and ordering protocols for various types of hematologic toxicities and anti-emetic regimens will be created to support the clinic's development. Collaborative drug therapy agreements (CDTA) utilizing current evidence-based guidelines will be created and submitted for approval. These protocols will give the pharmacists the ability to initiate or modify drug therapy, order related laboratory tests and assess patient's response to therapy, providing oncologists more time to spend on treatment of primary disease as well as accept new referrals. The study will be submitted to IRB for approval. This new service is expected to be implemented in January 2017. April 2017 will be used to assess impact of pharmacy interventions on patient outcomes, overall

cost of care, and improved access. Primary outcome measures will be evaluation of physician prescribing practices pre and post implementation which include adherence to NCCN guidelines and appropriateness of ESA use. Secondary outcome measures will include compliance with CMS guidelines, number of hospital admissions for supportive care related issues, percentage of patient encounters by oncologists, overall costs and patient satisfaction compared to pre-pharmacy involvement.

Results: n/a

Conclusion: n/a

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-343

Poster Title: Implementation of medication therapy management (MTM) for high risk patients

Primary Author: Moro Kim, Yakima Valley Memorial Hospital, WA; **Email:** morokim@yvmh.org

Additional Author (s):
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Christopher Cook

Purpose: Medication Therapy Management (MTM) is health care service provided by pharmacists that has been shown to optimize patients' drug therapy and improve therapeutic outcomes. Consistent and efficient MTM services can prevent medication errors, enhance medication compliance, active patient involvement in medication management, cost reduction and improve continuity of patient care. The objective of this project is to implement a pilot service that targets high risk patients using predictive analytics and optimize medication use. The final analysis will measure the various intervention made and their acceptance by the practitioners. Lastly, patient and practitioner satisfaction will be recorded for quality measures.

Methods: The project will be a collaborative effort with Signal Health, a clinically integrated health care network with a focus on the Institute for Healthcare Improvement's Triple Aim, targeting a Medicare patient population. The high risk patients will be identified using the Johns Hopkins Adjusted Clinical Groups Practice Model, a predictive analytics tool, and Patient Activation Measure surveys. Once patients are identified, residents and interns will contact patients via telephone for an appointment. When patients agree for the service, residents and interns will then conduct medication reconciliation, complete a medication use action plan that informs patients about their medication, and document any findings that need to be addressed with their primary care provider in their electronic medical record. The end result of this program will be measured by a 90 day retrospective review that will compare different types of interventions made, such as adverse drug reaction reduction, stop duplicate therapy, cost savings made, identify inappropriate indication, dose adjustment and drug interaction. In addition, the MTM service will also measure how many interventions were accepted by the practitioners with the patient profile review and practitioner responses.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-344

Poster Title: Implementation and assessment of a pharmacological venous thrombosis prophylaxis protocol in obese patients

Primary Author: Lauren Cope, Ascension | Wheaton Franciscan - St. Joseph, WI; **Email:** lauren.cope@wfhc.org

Additional Author (s):
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Betsy Karli
Anne Toy

Purpose: Obesity and venous thromboembolism (VTE) are on the rise in the United States, with over one-third of the population classified as obese and approximately 900,000 VTE events each year. It has been shown that obesity is a major risk factor for VTE and currently VTE chemical prophylaxis at Wheaton Franciscan hospitals is not standardized in obese patients. The purpose of this study is to design and implement a VTE pharmacist driven dosing protocol for obese patients with a BMI ≥40. Secondary analysis will look at adherence to the protocol and comparison between dosing before and after protocol implementation.

Methods: This study will be submitted to the Institutional Review Board for approval. The proposed protocol will be presented to the P&T committee before education and implementation. Patients included in the pharmacist driven VTE dosing protocol will be: adults >18 years old, BMI ≥40, length of stay ≥48 hours, and requiring chemical thromboprophylaxis. Exclusion criteria will be: CrCl < 30 mL/min, platelet count < 100,000/mL, and pregnant or post-partum patients. Appropriate dosing post-protocol will be defined as enoxaparin 40mg subcutaneous twice daily in patients with a BMI ≥40. Retrospective data will be collected from July 1st – November 30th, 2016 to analyze dosing patterns prior to implementation. Education will be provided to pharmacists, nurses, and physicians about the changes to dosing and ordering in the protocol. After implementation, adherence data will be assessed from December 1st – March 31st, 2017.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-345

Poster Title: Improving adherence to surviving sepsis campaign guideline recommendations for crystalloid bolus administration in the emergency department: a pharmacist quality improvement project

Primary Author: Bobbie-Jo King, Ascension | Wheaton Franciscan Healthcare - All Saints Hospital, WI; **Email:** bobbie-jo.king@wfhc.org

Additional Author (s):
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Kevin Peterson
Peter DeGroot
Paul Springborn

Purpose: To create and implement an educational intervention in the emergency department (ED) that will increase the compliance to the surviving sepsis campaign guideline recommendations of 30 mL/kg crystalloid fluid bolus in septic patients who are hypotensive with a lactate greater than 2 mmol/L prior to the initiation of a vasopressor.

Methods: This study has been submitted for approval by the Institutional Review Board. The electronic medical record system will identify patients discharged from the hospital for a period of three months who had a lactate level greater than 2 mmol/L drawn in the emergency department (ED). The following data will be collected: systolic blood pressure less than 100 mmHg, age, sex, length of stay, lactate level, weight, amount of fluid received, time span fluid ran over, vasopressor received within six hours, vasopressor used, number of vasopressors used, vasopressor started prior to the completion of fluid bolus administration. The primary end-point of this study is the percent compliance to a 30 mL/kg crystalloid fluid bolus prior to the administration of a vasopressor. Questionnaires will be created and distributed to physicians, nursing staff, and pharmacists who staff the ED. The questionnaires will determine potential barriers in education, workflow, and physical ability to adhere to the guideline recommendations. Based on the results of the questionnaires, educational interventions will be created and implemented in the ED that focuses on improving the primary end-point. Post intervention, three months of data will be collected and analyzed. Results and conclusions will be drawn between pre and post-intervention for rates for compliance.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-346

Poster Title: Review of institutional protocol adherence for the treatment of diabetic ketoacidosis in a community hospital

Primary Author: Angela Zivkovic, Ascension/Wheaton Franciscan St. Joseph Hospital, WI; **Email:** angela.zivkovic@wfhc.org

Additional Author (s):
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Purpose: Diabetic ketoacidosis (DKA) is a serious complication of diabetes. Treatment of this condition includes correction of dehydration, hyperglycemia, and electrolyte abnormalities. The American Diabetes Association (ADA) has developed a guideline with clear goals and recommendations for the treatment of DKA. Despite the protocol approach given in the guideline, studies have shown adherence to the DKA guideline is inadequate. The main objective of this study is to determine if treatment of DKA in a sample of adult patients in the hospital was consistent with institutional protocol.

Methods: This study has been approved by the Institutional Review Board. A retrospective chart review will be conducted using electronic medical records to identify patients who visited the Emergency Department (ED) and were given a diagnosis of diabetic ketoacidosis from May 31st to December 31st, 2016. All patients greater than 18 years of age will be included. The primary outcome will be the adherence to the institutional protocol for the treatment of DKA. The secondary outcome is the comparison of patients treated per protocol to off protocol treatment in regards to time to resolution of DKA, occurrences of hypokalemia and hypoglycemia, time to Critical Care Unit (CCU) discharge and time to discharge from hospital. The following data will be collected: time to CCU discharge, time to discharge from hospital, time to DKA resolution, potassium < 3.3 within 48 hours of admission to ED, appropriate potassium supplementation, initial IV fluid, initial insulin Infusion dose, correct start of subcutaneous insulin post resolution, number of hypoglycemic episodes, correct discontinuation of insulin infusion, restart of insulin infusion after resolution, and correct identification of resolution. All data will be recorded without patient identifiers. The findings of

this review will be used to provide education to both emergency and critical care department staff and implement changes to the institutional protocol if necessary.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-347

Poster Title: Comparison of patient-reported home opioid medications use and opioid prescriptions verified through a prescription drug monitoring database

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Additional Author (s):
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Robert Mueller
Michelle Reichart

Purpose: According to the CDC deaths from prescription opioid overdose have quadrupled since 1999. Prescription drug monitoring programs (PDMP) present an opportunity to track controlled medications through an electronic database. In light of the opioid overdose epidemic, pharmacy staff sought to evaluate the routine review of the PDMP during the medication verification process for continued home opioid medications. Ideally, this could ensure a more accurate admission medication list and guide appropriate inpatient medication therapy.

Methods: The electronic medical record will provide data on patients admitted from May 2016 to September 2016. Adult patients from all floors of the hospital will be included if an opioid is on the home medication list. Patients will be excluded if medication reconciliation isn't completed or a home medication list isn't collected. Pharmacist education on PDMP use prior to verification of reordered home opioid medications will be provided in November 2016. Implementation of pharmacist checking, documentation of findings, and physician communication of the PDMP report prior to verification of home opioid medications will take place in November 2016. Data will be collected after implementation from November 2016 to January 2017. The following information will be collected: number of opioids reordered from the home medication list, number of opioid discrepancies, types of opioid discrepancies, number of opioid fabrications, number of opioid omissions, number of physicians/pharmacies utilized by the patient, whether or not information obtained from the PDMP altered inpatient admission orders, whether or not a drug screen was collected, and whether or not drug screen

was positive for opioids. All data will be recorded without patient identifiers. The study has been approved as a quality assurance measure through the hospital's Institution Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-348

Poster Title: Implementation of a pharmacist driven VTE risk assessment tool

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Additional Author (s):
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Andrew Ticcioni

Purpose: Venous thromboembolism (VTE), which includes deep vein thrombosis (DVT) and pulmonary embolism (PE), is a leading complication among hospitalized patients. Currently pharmacists do not have a standardized approach to addressing pharmacological VTE prophylaxis. The primary objective of this study is to design and implement a pharmacist driven VTE risk assessment tool for medical patients admitted to Wheaton Franciscan St. Joseph Hospital. The secondary objective is to determine the appropriate usage of pharmacologic VTE prophylaxis in hospitalized patients using a pharmacist led VTE risk assessment tool.

Methods: The Institutional Review Board has approved this study. The electronic medical record will be utilized to collect patient data. Pre implementation data will be collected for 100 patients from January 2016 –September 2016 and post implementation data will be collected for 100 patients from November 2016 - March 2017. The following data will be collected: Padua risk assessment score, and its components, such as history of VTE, reduced mobility, active cancer, history of thrombophilic condition, recent trauma or surgery, obesity, acute MI/ischemic stroke, ongoing hormonal treatment, heart and/or respiratory failure, lower extremity arthroplasty, and spinal cord injury with paresis. All previously mentioned parameters will be recorded without patient identifiers and maintained confidentially. Pharmacists will use the risk assessment tool to determine the patient's need for pharmacologic VTE prophylaxis and convey their recommendation to the physician within 24 hours of admission by any form of communication they deem appropriate. This will ensure all patient have optimized pharmacological VTE prophylaxis. Pharmacists will be educated through a competency and they will receive the protocol and instructions for documentation. Statistical analysis will be

performed on the parameters mentioned above using a chi-squared test for categorical data and t-test for continuous variables.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-349

Poster Title: Implementation of a fluoroquinolone prescribing tool in response to recent FDA labeling changes

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Purpose: New data suggests that benefits do not outweigh potential risks when using fluoroquinolones for the treatment of certain uncomplicated infections including acute sinusitis, acute bronchitis, and uncomplicated urinary tract infections. The FDA has subsequently released new safety warnings and labeling changes for this drug class. The objective of this study is to create a tool for providers to use when prescribing fluoroquinolones in order to improve adherence to infectious diseases (ID) treatment guideline recommendations.

Methods: This study has been approved by the Institutional Review Board. All patient identifiers will be removed from data. A three-month retrospective chart review will be conducted to assess initial prescribing trends of fluoroquinolones. In collaboration with ID physicians, ID pharmacists and pharmacy clinical managers, this initial data will be used to develop a tool for providers to use when prescribing these agents. The tool will be applicable to patients admitted to the hospital as well as those who are seen in the Emergency Department and receive prescriptions for outpatient antibiotics. It will incorporate guideline-recommended uses of fluoroquinolones including suggested dosages and durations of therapy based on specific infectious indications. Following implementation of the prescribing tool, an additional three-month retrospective chart review will be performed to assess changes in prescribing trends and the use of fluoroquinolones. In addition, a pre- and post-implementation survey will be sent to physicians and pharmacists to understand their opinions on the use of these antibiotics at our institution.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-350

Poster Title: Implementation and evaluation of an electronic pain-agitation-delirium and spontaneous awakening and breathing trial order set in a community teaching hospital

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Purpose: One third of all intensive care unit (ICU) patients are mechanically ventilated. Poor adherence to standard pain-agitation-delirium (PAD) management recommendations established by the 2013 American College of Critical Care Medicine is associated with negative clinical outcomes. Additionally, prolonged mechanical ventilation may also lead to negative outcomes. Spontaneous awakening and breathing trials (SAT/SBT) have shown to shorten time on ventilation. The objective of this study is to implement a standardized electronic PAD with SAT/SBT order set to improve adherence to current guidelines. The secondary objective is to evaluate the use of the order set and patient outcomes after implementation.

Methods: This study has been approved by the Institutional Review Board. It is a single center, retrospective analysis of a practice improvement project. An electronic PAD order set based on the 2013 ACCM guidelines will be updated from the current paper order set. Also, an electronic SAT/SBT order set based on the trial by Girard, et al. will be built and implemented. The combined order set will be reviewed and approved by an interdisciplinary team of physicians, pharmacists, and nurses with a goal of implementation into the electronic ordering system before 2/2017. Patients in the ICU older than 18 years of age with an ICD-10 code for mechanical ventilation will be enrolled and retrospectively reviewed before and after implementation of the order set from 11/1/2015 to 6/30/2017. Exclusion criteria include patients intubated for less than 24 hours, or with traumatic brain injury, cerebrovascular injury, or receiving paralytic infusions. Monthly education on utilization of order set will be provided to nurses, respiratory therapists, and physicians in ICU. The following data will be collected:

patient demographics, baseline disease, medication usage, order set usage, daily SAT/SBT performance, length of mechanical ventilation, length of ICU and hospital stay, and re-intubation rate within 24 hours of extubation. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-351

Poster Title: Education and reinforced use of order set for early onset sepsis improves antimicrobial use in neonates

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Additional Author (s):
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Purpose: The Vermont Oxford Network (VON) initiative is aimed at reducing the overall antibiotic usage amongst neonates. VON has been enacted at Ascension St. Joseph Hospital to help reduce antimicrobial usage in the Neonatal Intensive Care Unit (NICU). With the implementation of EPIC, an order set was created to help physicians order the necessary therapies for NICU admissions, including commonly utilized antibiotics for Early Onset Sepsis (EOS). To further improve antimicrobial use in the NICU, education will be provided to physicians regarding utilization of the NICU admission order set.

Methods: This study will be submitted to the Institutional Review Board for approval. Education will be provided to physicians on the utilization of the NICU admission order set. The educational in-service will focus on importance of utilization of the order set for safe dosing, as well as pharmacist delegation on when antibiotics can safely be discontinued. Data will be collected pre and post educational in-service. Pre educational in-service data will be collected from October to December. The primary outcome is utilization of the NICU admission order set. The main secondary outcome is reduction in days of antibiotic therapy (measured by Days of Therapy) by 5%. Other specific data that will be collected includes patient demographic data, antibiotic combination used, and blood culture results.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-352

Poster Title: Implementation of a pharmacist-driven discharge medication reconciliation and counseling process: A transitions of care pharmacist service

Primary Author: Kaia Zepke, Aspirus Wausau Hospital, WI; **Email:** kaia.zepke@aspirus.org

Additional Author (s):
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Purpose: Pharmacist-led services involving discharge reconciliation and counseling have been shown to reduce readmission rates and increase patient satisfaction. The main objectives will be to determine if a pharmacist-driven transition of care service will reduce rates of readmission for high-risk groups and improve HCAHPs scores related to medications.

Methods: This study will be submitted to the Institutional Review Board for approval. The transitions of care pharmacist will identify and follow patients who are at high risk for readmission throughout the hospital (excluding the Emergency Department) based on the readmission risk scoring tool used in-house. When a patient is added to the service, the pharmacist will complete discharge medication reconciliation, update the discharge medication list and send it to the hospital provider for approval. Once discharge orders have been written for a particular patient, the pharmacist will bring any new prescriptions and medication information to the patient and provide education related to their medications, including but not limited to the indication for that medication, dosing, administration, adverse effects, and answer any patient questions. The data collection period will be three months. Primary end points will be readmission to the hospital, either through the Emergency Department or a direct admission, and percent difference in HCAHPs scores related to medications. Secondary endpoints will be number of accepted recommendations made by the pharmacist and time spent per patient.

Results: In progress

Conclusion: In progress

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 10-353

Poster Title: Implementation of a discharge medication delivery program for high risk patients in a community hospital

Primary Author: Cecilee Rodenkirch, Aspirus Wausau Hospital, WI; **Email:** cecilee.rodenkirch@aspirus.org

Additional Author (s):
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Purpose: Patients with multiple comorbidities utilizing prescription medications are at high risk for readmission due to the complexity of their medication regimens. The goal of this study will be to increase the number of patients discharging from the hospital with their essential medications.

Methods: The study will be presented to the Institutional Review Board for evaluation and approval. Eligible patients will include adults (greater than 18 years of age) with LACE Readmission Assessment Tool scores greater than nine on admission who are discharged home with new prescriptions or requiring refills of current prescriptions. Pharmacists will round on this patient population and offer medication dispensing prior to discharge along with appropriate education. The primary objective of this study is to increase the percentage of high risk patients leaving the facility with medications in their possession while attempting to decrease 30-day readmission rates. Secondary objectives will be to increase the raw number of prescriptions captured and revenue in the Aspirus Wausau Hospital Clinic Pharmacy. Participation from an interdisciplinary team is necessary to successfully implement this Discharge Medication Delivery Program at Aspirus Wausau Hospital.

Results: Study is in progress.

Conclusion: Study is in progress.

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-354

Poster Title: Comparison of morphine and hydromorphone containing patient controlled epidural analgesia solutions in pediatric post-operative patients

Primary Author: Jesse Cramer, Children's Hospital of Wisconsin, WI; **Email:** jlcramer@chw.org

Additional Author (s):

Purpose: The purpose of this study is to examine whether hydromorphone or morphine provides superior pain relief in the pediatric population post-operatively when administered via patient controlled epidural infusion. Published studies have reported that patient controlled epidural analgesia after surgery in the pediatric population can be both safe and effective for pain management. Hydromorphone and morphine are two commonly used opioids for epidural analgesia. There is little data available on the comparative effectiveness of morphine versus hydromorphone with patient controlled epidural analgesia after surgery in the pediatric population.

Methods: A retrospective chart review will identify patients within the electronic health record who had epidural analgesia post-operatively with either hydromorphone or morphine over a one year period. Patients between the ages of 0 and 18 years will have their charts reviewed. Data collected will include pain scores on post-op days 0-2, type of opioid used in the epidural solution, dosing parameters, changes made to the epidural solution, number of PCEA button demands and deliveries, and length of hospital stay. This study will be submitted to the Institutional Review Board prior to commencement for approval.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-355

Poster Title: Evaluation of clonidine usage and development of a tapering schedule at a large pediatric teaching hospital

Primary Author: Patrick McBride, Children's Hospital of Wisconsin, WI; **Email:** pmcbride@chw.org

Additional Author (s):

Purpose: This medication use evaluation will examine enteral and transdermal clonidine usage. In addition a guideline will be developed for a clonidine tapering schedule for use in pediatrics.

Methods: An evaluation of the current literature will be conducted in order to determine usage of clonidine in a pediatric setting with regards to tapering off of sedative and analgesic medications. A medication use evaluation will be preformed to collect information about clonidine usage at a large pediatric hospital. Data collected may include patient demographics, presence of withdrawal symptoms, supportive medications taken, length of intensive care unit stay, and length of clonidine therapy. Information related to current clonidine tapering and withdrawal symptoms may also be captured. The electronic medical record will be utilized to retrospectively identify patients receiving clonidine after prolonged exposure to sedative and analgesic medications. This medication use evaluation will be submitted to the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-356

Poster Title: Incidence and risk factors associated with nephrotoxicity in pediatric patients treated with concomitant vancomycin and piperacillin-tazobactam

Primary Author: Ashley Brown, Children's Hospital of Wisconsin, WI; **Email:** albrown2@chw.org

Additional Author (s):
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Purpose: The primary objective of this study is to evaluate the incidence of nephrotoxicity associated with the concomitant use of vancomycin and piperacillin-tazobactam in pediatric patients and to determine associated risk factors. The published incidence of vancomycin nephrotoxicity is 5% to 35%, however piperacillin-tazobactam is rarely associated with nephrotoxicity. Vancomycin is frequently used in combination with piperacillin-tazobactam in hospitalized patients. This combination has recently been reported in the adult population to increase the risk of nephrotoxicity. Data in the pediatric population are sparse.

Methods: A retrospective chart review of patients greater than 28 days old and less than 18 years old that received concomitant vancomycin and piperacillin-tazobactam treatment for a minimum of 72 hours will be performed. Kidney Disease: Improving Global Outcomes (KDIGO) clinical practice guidelines will be used to assess nephrotoxicity. Serum creatinine values prior to, during, and up to 1 week following concomitant therapy will be reviewed for up to four years from present. Descriptive statistics will be used to evaluate the rates of acute kidney injury associated with concomitant vancomycin and piperacillin-tazobactam therapy. Length of time from initiation of concomitant therapy to acute kidney injury and associated risk factors for the development of acute kidney injury will also be evaluated. Data collected from the electronic health record may include: age, weight, height, serum creatinine values, blood urea nitrogen values, indication for antimicrobial treatment, vancomycin dose and frequency, vancomycin length of therapy, piperacillin-tazobactam dose and frequency, piperacillin-tazobactam length of therapy, hospital length of stay, and concomitant nephrotoxic medications. The study will be submitted to the Institutional Review Board (IRB).

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-357

Poster Title: Medication Use Evaluation of Efficacy and Safety of Tocilizumab in Pediatrics

Primary Author: Grace Herr, Children's Hospital of Wisconsin, WI; **Email:** gherr@chw.org

Additional Author (s):

Purpose: Tocilizumab, IL-6 receptor inhibitor is indicated for juvenile idiopathic arthritis and polyarticular juvenile idiopathic arthritis for patients 2 years of age and greater. The purpose of this study is to determine effectiveness and safety of tocilizumab use in pediatric patients.

Methods: A retrospective chart review of tocilizumab use at a tertiary care pediatric hospital will be conducted to assess efficacy and safety of tocilizumab in children age 2 to 18 years. Data will include patient demographics, baseline disease characteristics, previous exposure to biologics, treatment regimen, patient response to therapy, and adverse events. Descriptive statistics with categorical data represented as frequency will be performed to analyze significance of the finding. Systemic literature review pertaining to labeled and unlabeled use in pediatrics will be completed. Patient information will be obtained through the electronic health record. This medication use evaluation for the hospital system will be submitted to the institutional review board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Evaluative Study

Session-Board Number: 10-358

Poster Title: Diabetic ketoacidosis (DKA) protocol compliance and outcomes

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Additional Author (s):
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Purpose: The implementation of diabetic ketoacidosis (DKA) guidelines in healthcare systems has been shown to improve patient outcomes. However, current literature suggests professional adherence to guidelines is not sustainable in many medical settings and protocol fidelity is variable. There are many potential reasons for inconsistency of implementation including the complexity of the patient, clinical status, and differences in health-system strategies for implementation. The purpose of this study was to assess adherence to the Froedtert DKA protocol and to determine if there is an association between protocol compliance and clinical outcomes.

Methods: A retrospective chart review of patients 18 years old or older admitted to a critical care unit with a diagnosis of DKA from January 1, 2015 through May 1, 2015 at Froedtert and the Medical College of Wisconsin was approved by the pharmacy research committee and was conducted. The primary objective was to determine whether compliance to the Froedtert DKA protocol impacted the rate of return to insulin infusions (or rebound DKA). Secondary objectives were to distinguish compliance at the 9 protocol checkpoints, including fluid resuscitation, the rate of insulin infusion, the amount of subcutaneous insulin selected for transition to subcutaneous insulin, the amount of time the insulin infusion is running after the first dose of subcutaneous insulin, and to identify possible reasons for protocol noncompliance, including safety concerns (e.g., hypoglycemia).

Results: Forty-eight patients met inclusion criteria, of which, 38 % were male (n = 18) with a mean age of 45 years (ranging from 19-90 years old). There were an equal number of patients

with type 1 and type 2 diabetes mellitus, 52% (n=25) and 48% (n=23), respectively. Of the 48 patients, 25% experienced rebound DKA (n = 12). Of those that had rebound DKA, each patient had at least one deviation from the hospital's DKA protocol (n=12). Of the patients that did not have rebound DKA, five patients (14%) had care that was consistent with the protocol and compliant at each checkpoint (p = 0.3). The median number of points of protocol non-compliance was three (range 0-5) in the rebound DKA population and two (range 0-6) in those without rebound DKA; p=0.6. The most common protocol deviation was not having their home regimen restarted; 75% (n=9) and 75% (n=27) for rebound DKA and no rebound DKA groups, respectively. Followed by not receiving their first dose of subcutaneous insulin at an appropriate time after transition from insulin infusion, 58% (n=7) vs. 56% (n=20).

Conclusion: Only a quarter of the patients experienced rebound DKA despite variability in compliance to the DKA protocol. Failure to comply with the Froedtert DKA protocol was observed at similar checkpoints in both groups of patients, irrespective of occurrence of rebound DKA. Further research is needed to determine if improving the protocol for DKA management can promote adherence or if protocol fidelity is not feasible.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-359

Poster Title: Evaluation of the effect acetazolamide has on postoperative intraocular pressure reduction following cataract surgery

Primary Author: Ivana Micanovic, Gundersen Health System, WI; **Email:** micanovicivana86@gmail.com

Additional Author (s):
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Purpose: Cataract formation is the most common age-related eye disease in the United States. One potential complication of cataract surgery is the development of transient intraocular hypertension. Acetazolamide may be used prophylactically at the conclusion of a cataract surgery to lower postoperative intraocular pressure (IOP). Known risk factors for ocular hypertension include diabetes, dyslipidemia, and systemic hypertension. The objectives are to determine the effect of acetazolamide on postoperative IOP in patients undergoing cataract surgery, and to evaluate if patients with certain comorbid conditions, including diabetes, hypertension, and dyslipidemia, have higher postoperative IOP, and therefore would be better candidates for acetazolamide.

Methods: Approval through the Institutional Review Board will be obtained prior to data collection. A retrospective chart review will be accomplished utilizing the electronic medical record. All data will be recorded without patient identifiers and maintained confidentially. Eligible patients include those 18 years of age and above undergoing cataract surgeries at Gundersen Health System within the predetermined time period. Patients will be excluded if they are on chronic carbonic anhydrase inhibitor therapy, or if they have a past medical history of glaucoma. The study will compare postoperative IOP in patients receiving acetazolamide versus patients not receiving acetazolamide after undergoing cataract surgery. The data collected for each patient will include: age, sex, postoperative IOP, and comorbid conditions including diabetes, hypertension, and/or dyslipidemia. Appropriate statistical analysis will be completed using the student's t-test. Data collected from this study will be used to determine if postoperative acetazolamide is beneficial for preventing intraocular hypertension after cataract surgery, and if any risk stratification may be made based on comorbid conditions and increases in IOP.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 10-360

Poster Title: Efficacy of preoperative gabapentinoids as adjuvant therapy in multi-modal pain control following total knee arthroplasty

Primary Author: Sarah Kryka, Gundersen Health System, WI; **Email:** slkryka@gundersenhealth.org

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Purpose: Total knee arthroplasty is one of the most common elective surgical procedures in the United States with approximately 4.7 million people in 2010 having undergone the surgery. The benefits of effective postoperative pain control include decreased length of hospitalization, fewer pulmonary, cardiac, and thromboembolic complications, prevention of chronic pain development, earlier mobilization, and improved patient satisfaction. The objective of this study is to assess postoperative opioid use, pain scores, and hospital length-of-stay in inpatient total knee replacement surgery patients before and after implementing pre-procedural gabapentinoid use for adjunctive analgesia.

Methods: This study will be submitted to the Institutional Review Board for approval. Data gathering will occur within the electronic medical record using samples of total knee arthroplasty patients prior to and after the addition of a gabapentinoid to the order-set. Data collected will include: patient's age, gender, body mass index, prior to admission opioid and gabapentinoid use, serum creatinine, total opioid use during the first 24 hours after surgery, pain score 24 hours after surgery, length of hospitalization, and the dose and type of gabapentinoid used preoperatively, if any. Patients will be matched according to baseline characteristics. Collected data will be evaluated based on the calculation of average pain score at 24 hours postoperatively using the numeric rating scale, average opioid use in oral morphine equivalents for 24 hours postoperatively, and average length of stay. Patient outcomes pre- and post-addition of a gabapentinoid to the order-set will be compared using a Student's t-test or Wilcoxon Rank Sum Test for non-normal data to analyze differences for statistical significance.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-361

Poster Title: Optimizing initial empiric antibiotic therapy timing and administration among patients in the emergency department

Primary Author: Claire VanAlstyne, Gundersen Lutheran Medical Center, WI; **Email:** csvanals@gundersenhealth.org

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Purpose: The Surviving Sepsis Campaign has identified the administration of broad-spectrum antibiotic therapy within one hour of the recognition of septic shock and severe sepsis as the goal of therapy to improve outcomes and reduce mortality. Similarly, the Centers for Medicare and Medicaid (CMS) quality measures dictate that antibiotics be administered within three hours of the identification of severe sepsis or septic shock. The purpose of this study is to evaluate if Gundersen Lutheran Medical Center is meeting this goal of timing for antibiotic administration and to identify any potential barriers or trends that are preventing this from being accomplished.

Methods: Approval will be obtained from the Institutional Review Board for retrospective chart review and data collection. Eligible patients include all patients admitted from the emergency department with suspected sepsis or septic shock as identified utilizing the electronic medical record, ICD-9, and ICD-10 codes. The data to be collected include age, antibiotic-related allergies, suspected source of infection, time from determination of suspected sepsis to administration of antibiotic, availability of antibiotic from the automated dispensing system, incompatibility of antibiotics, and antibiotics ordered and administered. All data will be recorded without patient identifiers and maintained confidentially. Data from patients who did not receive antibiotics within the desired three hour window will be analyzed to determine potential barriers to treatment.

Results: n/a

Conclusion: n/a

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-362

Poster Title: Evaluation of antibiotic prescribing practices for early-onset sepsis in the neonatal intensive care unit

Primary Author: Jackelyn Roberts, Gundersen Lutheran Medical Center, WI; **Email:** jackelynr13@gmail.com

Additional Author (s):
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Purpose: The appropriate prescribing of antibiotics in the neonatal intensive care unit is a current challenge faced by many clinicians. Early-onset sepsis can be difficult to diagnose and is often treated when an infection is not confirmed. The objective of this study is to evaluate antibiotic prescribing for consistency in empiric treatment of early-onset sepsis in the neonatal intensive care unit with a goal of standardizing practice. A guideline will then be proposed with integration into the Antimicrobial Stewardship Program.

Methods: This retrospective study has been submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify neonates with antibiotic utilization within the first three days of life and neonates not prescribed antibiotics with specific clinical criteria. The criteria include an elevated C-reactive protein (> 1 mg/dL), neutropenia (ANC < 1,000 cells/mm3), thrombocytopenia (< 150,000/microL), or the need for supplemental oxygen within the first three days of life. Patients will be excluded if the medication prescribed was an antifungal or ophthalmic erythromycin ointment. The following data will be collected: gestational age, birth weight, gender, ethnicity, maternal group B streptococci status and antibiotics administered if applicable, timing of rupture of membranes to birth, presence of chorioamnionitis, antibiotic prescribed and any additional antibiotics during hospitalization, total duration of antibiotics, clinical signs and symptoms of infection, including pertinent lab values and vital signs, culture results and antibiotic susceptibility information, and the presence of a confirmed infection identified by the patient's problem list. All data will be recorded without patient identifiers and maintained confidentially. The percentage of patients prescribed

antibiotics given specific maternal factors and clinical criteria will then be identified and the prescribing consistency will be determined.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-363

Poster Title: Novel atorvastatin and rosuvastatin extemporaneously compounded oral suspensions for inpatient use

Primary Author: David Dulak, Gundersen Lutheran Medical Center, WI; **Email:** djdulak@gundersenhealth.org

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Purpose: HMG-CoA reductase inhibitors (statins) provide many benefits to patients in the acute care setting, especially after acute coronary syndrome events and strokes. Often these patients experience swallowing difficulties that make traditional administration of oral tablets difficult. Currently there are no commercially available liquid formulations for statins. Minimal publications about extemporaneously compounded suspensions of statins exist in the literature, thus developing a validated formula could prove advantageous in this patient population. The objective of this study is to formulate atorvastatin and rosuvastatin oral suspensions and confirm their physical stability and chemical integrity.

Methods: As proof of concept, multiple suspensions for both atorvastatin and rosuvastatin will be created with varying concentrations, suspending agents, and vehicles and stored under refrigeration (between 2 and 8 degrees Celsius) for seven days. After initial storage, these formulations will be assessed for their organoleptic properties, pH, and physical stability. Chemical integrity will be further determined using high performance liquid chromatography and defined as maintaining at least ninety percent of the concentration of the active pharmaceutical ingredient. The chromatography samples will be kept at both controlled room temperature (between 20 and 25 degrees Celsius) and under refrigeration and will be analyzed in triplicate after seven and thirty days to assign appropriate beyond-use dating and storage conditions.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 10-364

Poster Title: Warfarin management in patients with cancer receiving chemotherapy

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Purpose: Patients with cancer are at an increased risk of thrombotic events and warfarin therapy may decrease this risk. Chemotherapy can increase or decrease the anticoagulant effects of warfarin, depending on the specific chemotherapy treatment. Despite these effects on warfarin, current warfarin dosing and international normalized ratio (INR) lab management guidelines do not exist for patients with cancer on specific chemotherapy treatment. The objective of this study is to determine if this institution's Anticoagulation Service (ACS) is effectively reaching desired anticoagulation for patients with cancer on warfarin who are receiving chemotherapy.

Methods: This is a retrospective cohort study and will include patients 18 years and older treated with chemotherapy for a cancer diagnosis managed on warfarin by this institution's ACS during the study period May 2016 to November 2016. After Institutional Review Board approval, data will be gathered electronically from subject medical records including age, warfarin management by this institution's ACS, type of cancer and date of cancer diagnosis, date of chemotherapy treatment, name of chemotherapy medications received during the study period, and major bleeding or thrombotic events. Manual chart review will be performed to gather subjects' goal INR range and the percentage of time within this goal range. Subjects who have a goal INR range that includes a value less than two will be excluded. Data will be assessed in three subject groups: 1) patients with cancer taking warfarin who are receiving chemotherapy treatment, 2) patients with cancer taking warfarin who are not receiving chemotherapy treatment, 3) patients without cancer taking warfarin who are not receiving chemotherapy treatment. Statistical analysis will be conducted to determine if differences exist between the three subject groups regarding subjects' INR time in therapeutic range and major

bleeding or thrombotic events. These results will be used to determine appropriate warfarin dosing and frequency of INR lab draws for patients with cancer receiving chemotherapy.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 10-365

Poster Title: Pharmacogenetics in practice: preliminary outcomes and clinician feedback on the Marshfield Clinic electronic medical records and genomics (eMERGE) pharmacogenetics (PGx) study

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Purpose: The electronic MEdical Records and GEnomics (eMERGE) pharmacogenetics (PGx) study is a multi-site pilot program focused on integration of patient genetic results into the electronic medical record (EMR), with the goal of providing medication recommendations tailored to the patient's genotype. The goals of the present study are to determine outcomes of patients enrolled in the eMERGE PGx project who were taking warfarin and had pharmacogenetic (PGx) alerts fire in the EMR when providers were prescribing warfarin between November 2014 – June 2016, and to assess provider feedback regarding comprehension and utility of the EMR PGx alerts.

Methods: This study has been submitted to the Institutional Review Board for approval. The eMERGE PGx project at Marshfield Clinic will be evaluated in two phases.
Phase I (outcomes) is a retrospective descriptive analysis of the eMERGE PGx cohort with triggered PGx alerts. These alerts will be evaluated via manual and electronic chart review of up to 28 warfarin patients, 4 simvastatin patients, and 1 clopidogrel patient; the latter two groups will be descriptively analyzed. Outcomes assessment will include time to target INR, accuracy of predicted warfarin dosing based upon genotype, incidence of bleeds or clots, as well as hospitalizations and all-cause mortality in the warfarin subgroup.
Phase II (clinician feedback) will be a prospective observational – cross sectional internet-based survey. Select Marshfield Clinic clinicians with prescriptive authority will be provided with a case example including the eMERGE PGx alert, and will be asked to complete a short online survey on their perceptions and feedback regarding the PGx alert. Demographic data will be collected in addition to case scenario specific question. Data will be de-identified, summarized

and evaluated. All data analyses will be carried out using commercially available statistical software package SAS (version 9.4, English).

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-366

Poster Title: Impact on diabetes control utilizing a multidisciplinary approach to the management of uncontrolled type 2 diabetes involving pharmacist telephonic intervention within an internal medicine clinic

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Purpose: Intensification of therapy for diabetes remains suboptimal despite strong clinical evidence to reduce adverse outcomes. This may be due to complicated diabetic management plans, leading to potential confusion about health care related issues and cause patients to feel overwhelmed by these burdens. Pharmacists may be positioned to bridge this gap. Our study seeks to determine the benefit of and will contribute to addressing the issues of uncontrolled type 2 diabetes (T2DM) through the collaboration of a multidisciplinary care model utilizing pharmacist telephonic intervention for T2DM patients well above Hemoglobin A1C (HbA1C) goal seen in an internal medicine clinic.

Methods: This is an Institutional Review Board approved single-center prospective observational study designed to evaluate HbA1C differences in patients 18-79 years of age with uncontrolled T2DM (HbA1c > 9%) who utilize clinical pharmacists in a multidisciplinary team approach compared with patients who receive usual medical care over 9-12 months. Secondary outcomes include change in blood pressure and fasting lipid panel. Exclusion criteria include pregnancy, type 1 diabetics, non-English speaking, cognitive impairment or hospice care. Up to 100 patients will be randomized into either an intervention arm (n=50) or control arm (n=50). Assuming a 20% dropout rate of 20 patients (n=80), we will have 79% power to detect a difference in HbA1C reduction of 0.6% between groups. Using a standardized script, a pharmacist will contact the patient telephonically, obtain consent and perform an initial full medication reconciliation and medication therapy review. Subsequent phone calls will occur every 4-6 weeks until the follow-up period is reached. If a patient is determined to be at goal and adherent to their diabetes regimen after 3 interventions, a qualified support staff member

may facilitate follow-up calls under pharmacist supervision. Patients non-adherent or with out-of-range blood glucose or blood pressure values will be referred back to their providers with drug therapy recommendations. A 6 month interim analysis will determine if study-end will be appropriate at 9 months or 12 months.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-367

Poster Title: Evaluation of broad spectrum antibiotic use for skin and soft tissue infections before and after inpatient antimicrobial stewardship interventions

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Purpose: The Centers for Disease Control and Prevention (CDC) estimates that 20-50% of all antibiotics prescribed in hospitals are unnecessary or inappropriate. Skin and soft tissue infections (SSTIs) are a common indication for the use of antibiotics. The Infectious Diseases Society of America (IDSA) has published guidelines regarding when broad spectrum and narrow spectrum antibiotic agents should be utilized when treating SSTIs. The purpose of this study is to evaluate the use of broad spectrum antibiotics for patients with SSTIs and compare patients where the antimicrobial management team (AMT) intervened to those patients where no intervention was performed by the AMT.

Methods: This study will be conducted at Mayo Clinic Health System (MCHS) - Eau Claire Hospital. A retrospective chart review will be completed for hospitalized SSTI patients admitted post-implementation of focused antimicrobial management team (AMT) interventions and physician education. These patients will be compared to patients admitted pre-implementation of the AMT but after the most current IDSA SSTI guidelines (2014) were published. AMT interventions will include having the team specifically discuss SSTI patients, make antibiotic therapy recommendations to the attending physician, and contact physicians to include documentation of SSTI classification and severity in their notes. Physician education about current IDSA guidelines for SSTI treatment and the use of broad spectrum antibiotic agents will be distributed. The primary outcome of this study is length of broad spectrum antibiotic therapy. Secondary outcomes include total days on antibiotic therapy, 30-day readmission rates, Clostridium difficile infection rates, and cost of antibiotic therapy. The collected data will include: age, gender, risk factors for SSTIs, comorbid conditions, days on broad spectrum

antibiotics (piperacillin-tazobactam, cefepime, carbapenems), total days of antibiotic therapy (inpatient and outpatient), days to de-escalation of antibiotic therapy, antibiotic use prior to admission, 30-day readmission or outpatient antibiotic treatment for SSTI within 30 days post-discharge, whether a C. difficile infection developed, and acquisition costs of the medications. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-368

Poster Title: Verification of accuracy of current emergency department medication history process to identify potential areas for improvement

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Purpose: Obtaining accurate and up-to-date medication histories is at the forefront of proper patient care. A comprehensive medication list provides practitioners the necessary information needed to adequately assess, evaluate, and treat patients. Inaccurate medication histories can lead to poor patient outcomes including adverse drug events, increased need for monitoring, and added medical costs. The objective of this study is to determine the accuracy of the hospital's current medication history process performed by nursing staff and to identify gaps/areas of improvement. The goal is to provide better patient care and enhance overall care transitions by involving pharmacy team members in the process.

Methods: This quality improvement study will be performed on hospitalized patients admitted through the emergency department (ED) in which a medication history was completed by nursing staff. A pharmacy resident will perform a follow-up medication history on these patients within 24 hours of hospital admission to verify the accuracy of medication histories obtained in the ED and to determine where errors are occurring in the current process. Data collected will include: age, gender, race, admitting diagnosis/location, number of medications, number and type of discrepancies found, high-risk medications, and source of medication information (i.e. patient, family, pharmacy). A "discrepancy" will be defined as any of the following: drug omission, duplicate therapy, incorrect medication (i.e. missing drug name, dose, route, frequency), or missing allergy. Definition of "high-risk medications" will be adapted from the Institute For Safe Medication Practices (ISMP) High-Alert Medications List. These include: transplant, cardiology, anticoagulant, and hypoglycemic medications. Percentage of patients

with incorrect medication histories is the primary endpoint. Secondary endpoints include discrepancies involving high-risk medications, number of changes made to med list, and a breakdown of discrepancies. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-369

Poster Title: Pharmacogenomics educational series and development of clinical decision support

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Purpose: Pharmacogenomics is a rapidly growing but often underutilized field. Two common barriers to implementation include clinicians' limited knowledge and absence of software support. This project will assess the effectiveness of a six-presentation series on clinicians' knowledge of pharmacogenomics over a period of six months. Additionally, clinical decision support will be created in parallel with the lectures to reinforce knowledge and allow practical application of pharmacogenomics. The combination of these efforts will create a foundation upon which pharmacogenomic services can be expanded in the future.

Methods: Six pharmacogenomics lectures will be provided over six months to a pre-selected group of forty-one clinicians and managers. Presentation topics include: an introduction to pharmacogenomics, neurology, cardiology, oncology, infectious disease/transplant, and barriers to implementation/miscellaneous. Teaching effectiveness will be measured through participant assessments given via an electronic audience response system. Assessments will be provided before, during, and/or after each lecture. To analyze long term knowledge retention, questions from previous lectures will be included in assessments before subsequent lectures. Data will be statistically analyzed upon completion of the lectures.
Additionally, an informatics pharmacist and the primary investigator will create standardized clinical decision support using available pharmacogenomic guidelines. The informatics pharmacist will work with the electronic medical record to develop discrete documentation fields for pharmacogenomic test results. Subsequently, alerts with specific criteria will be designed to advise clinicians when ordering an interacting medication for a patient with documented pharmacogenomic results, as well as to suggest recommended alternatives. These alerts will be presented to the Pharmacy and Therapeutics Committee for approval. The

effectiveness and relevance of the alerts will be tracked over time through analysis of alert frequency, and whether these alerts are accepted or overridden.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-370

Poster Title: Evaluating the impact of pharmacy-led admission medication history in pre-operative patients compared to the standard of care at St. Elizabeth Hospital

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Purpose: The purpose of this quality improvement project is to evaluate the impact of a pharmacy-led admission medication history in pre-operative patients on both the accuracy and completeness of the medication list and on pharmacy staffing. At St. Elizabeth Hospital, nurses in the pre-surgery area perform the admission medication history for pre-operative patients during the pre-operative phone call, while pharmacy staff collects and verifies the medication history for all other hospital admissions. There have been multiple occurrence reports filed from the pre-surgical area describing predominantly errors of omission and errors of incorrect medication and dose.

Methods: Background data will be collected on a select number of post-operative total knee or hip arthroplasty patients each week during the period of September 26, 2016 to November 11, 2016 by repeating the admission medication history post surgically. Potential for process improvement will be measured by the number and type of errors or discrepancies found in the medication history completed before surgery compared with that collected by pharmacy staff. After the background data collection is complete, pharmacy will begin a pilot program to collect a pre-procedure medication history on a select number of patients. The goal of this pilot program is to develop a process for pharmacy to record the most complete and accurate medication list possible, prior to the patient's admission. Outcomes will be measured by comparing the number and type of discrepancies found in the medication history before and after implementation. Time studies will be conducted during implementation to determine the potential impact on pharmacy staffing.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-371

Poster Title: Implementation of pharmacy involvement in a discharge medication reconciliation and discharge education process at a community hospital

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Purpose: This quality improvement project will pilot a pharmacist–led service to facilitate the reconciliation of medications and provide patient medication education at discharge. Currently there is no formal involvement of pharmacy in the discharge process. The goal of this project is to determine if pharmacist participation will lead to an improved process, measured primarily by the number and type of interventions made by pharmacists and secondarily by patient readmission within 30 days of discharge.

Methods: Prior to implementation of the pilot, background data will be collected by performing retrospective medication reconciliation on a randomly selected group of patients who have been discharged with a diagnosis of heart failure, chronic obstructive pulmonary disease, respiratory failure, pneumonia, or acute renal failure/acute kidney injury between July 27, 2016 and August 11, 2016. This patient group was selected based on diagnoses most commonly associated with hospital readmissions as determined by data published by the Agency for Healthcare Research and Quality. After background data collection, a discharge medication reconciliation process that includes pharmacist participation will be created and piloted in the specified patient population. The medication reconciliation process will involve reviewing a patient's home medications compared with hospital medication therapy to develop an accurate, appropriate, and evidence based medication list upon discharge. After medication reconciliation completion, the pharmacist will notify the provider that the medication list has been reviewed and will provide recommendations for any needed modifications to the home medication list. The pharmacist will also evaluate concerns regarding access to and affordability of the medications and recommend alternatives if necessary. After discharge medications are finalized, the pharmacist will provide medication education and adherence aids to facilitate

patient understanding of the medication regimen, including purpose of the medication, how it will benefit the patient, potential side effects, and things to remember.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-372

Poster Title: Utilization of gabapentin in an alcohol withdrawal protocol at a community hospital

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Purpose: Recent literature suggests that gabapentin is effective in the management of alcohol withdrawal. The utilization of gabapentin within withdrawal protocols has shown several benefits when compared with traditional protocols that utilize benzodiazepines. This study will compare the outcomes between patients treated with a lorazepam based protocol, and those treated with a gabapentin based protocol. The primary objective is to implement an optimized alcohol withdrawal protocol that utilizes gabapentin for effective symptom management.

Methods: Wheaton Franciscan Healthcare manages alcohol withdrawal at two different facilities in Racine, WI. Each facility uses a different method for alcohol withdrawal management, and there were anecdotal observations of higher amounts of benzodiazepines being utilized on the general medical units than on a medical managed detoxification unit. Additionally the detoxification unit utilized gabapentin in their treatment protocol. This study will compare differences between alcohol withdrawal management at All Saints a 200 bed hospital and St. Luke's a 70 bed detoxification unit. This will be a retrospective naturalistic outcomes study design. The data will be gathered from chart review of the electronic medical record for patients treated for alcohol withdrawal between January 2016 - September 2016. The data will include: age, gender, blood alcohol content on admission, total benzodiazepine dosage used, total gabapentin dosage used, clinical institute withdrawal assessment for alcohol score, length of stay, and if the patient experienced any seizures or delirium during treatment. The study will be submitted to the Institutional Review Board for approval. Patients will be risk stratified using the Prediction of Alcohol Withdrawal Severity Score in a retrospective fashion.

Data will be analyzed to compare the two protocols with regards to the above mentioned patient outcomes. An optimal protocol will then be submitted to the pharmacy and therapeutics committee for implementation at both institutions.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-373

Poster Title: Evaluation of Alcohol Withdrawal Practices at a Community Hospital

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Purpose: In 2010, 1.9 million people discharged from the hospital had at least one alcohol-related diagnosis. Mortality rates of alcohol withdrawal syndrome (AWS) are estimated to be as high as 15% in untreated patients versus 2% in treated patients. At Ascension/Wheaton Franciscan-St. Joseph Hospital, an alcohol withdrawal protocol is initiated in patients experiencing AWS, and the Clinical Institute Withdrawal Assessment for Alcohol (CIWA-Ar) scores are used to assess the severity of alcohol withdrawal symptoms. The purpose of this study is to assess the utility of and adherence to the alcohol withdrawal protocol at Ascension/Wheaton Franciscan-St. Joseph Hospital.

Methods: A retrospective chart review will be conducted utilizing electronic health records to identify patients admitted to Ascension/Wheaton Franciscan-St. Joseph Hospital diagnosed with AWS during a three month period. The primary objective is to determine adherence to the alcohol withdrawal protocol. To assess this objective, patient charts will be reviewed to see if the protocol was ordered in patients undergoing AWS, and if the appropriate amount of benzodiazepines were administered in response to CIWA-Ar scores. Secondary objectives include describing the patient population being treated for AWS at Ascension/Wheaton Franciscan-St. Joseph Hospital; discover what, if any, medications patients are being discharged home with to help treat or prevent withdrawal; to identify an optimal medication regimen for alcohol withdrawal. To evaluate these objectives the following information will be collected: patient demographics, previous hospitalizations for AWS in the past 12 months, delirium tremens, number of seizures, adjunct medication utilization, ICU admission, duration of withdrawal, length of stay, complications, and discharge prescriptions for AWS. All information will be maintained confidentially. Data will be analyzed using the appropriate statistical tests. Chi squared test will be used for categorical variables and a t-test will be used for continuous

variables. Statistical significance will be at $p < 0.05$. To assess for influence of confounding factors multiple linear regression will be used.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-374

Poster Title: Effects of a new initiative to increase probiotic prescribing in the intensive care unit on all-cause diarrhea incidence and probiotic prescribing

Primary Author: Meghan Learned, Wheaton Franciscan Healthcare - St Francis Hospital, WI; **Email:** meghanlearned@gmail.com

Additional Author (s):
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Purpose: Diarrhea and clostridium difficile infections are common aliments affecting intensive care unit (ICU) patients. There are several risk factors for these illnesses that ICU patients regularly experience, including antibiotic use, immunosuppression, and changes in nutritional status. The primary purpose of this project is to examine probiotic prescribing habits in the ICU and the incidence of all-cause diarrhea, both before and after the introduction of a new initiative to increase probiotic prescribing.

Methods: This study has been submitted for approval by the Investigational Review Board. Data will be collected from the electronic health records of two groups of ICU patients from two community hospitals in Milwaukee, Wisconsin: those prior to and those after the introduction of the new initiative. The percent of probiotic use in the pre-initiative group will be compared to percent of probiotic use in the post-initiative group. This data will be analyzed to determine the primary outcome of change in probiotic prescribing. For the remaining outcomes the post-initiation group will be further divided into those that received probiotics and those that did not receive probiotics. A random sampling of 15 patients per month, per group, will have the following data collected: patient demographics, probiotic use, diarrhea incidence, number of ordered clostridium difficile polymerase chain reaction (PCR) tests and the results of those tests, 30 day readmission, blood culture results, concurrent mechanical ventilation, enteric feedings, or total parenteral nutrition, and use of antibiotics, proton pump inhibitors, histamine-2 receptor antagonists, antidiarrheal medications, or laxatives. Collected data will be analyzed to determine the additional primary outcome of incidence of all-cause diarrhea between the three groups of patients. Secondary outcomes of the study will be the number of

clostridium difficile PCR tests ordered and the results of those tests. An additional secondary outcome will be 30 day readmissions.

Results: NA

Conclusion: NA

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-375

Poster Title: Epic alert reduction efforts for Ascension Wisconsin inpatient hospital providers

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Purpose: Our hospital system transitioned to Epic computer systems in May of 2016. As part of the post-Epic "go-live optimization phase", hospital administration expressed interest in a team-based targeted effort to identify, customize, and reduce the number of unnecessary fired alerts that came with initial implementation of the new system. Noticeable frustration with the current level of default alerts among inpatient staff in our hospital system has raised concern across multiple departments. Primary analysis has shown over 500,000 alerts were overridden by providers during August alone, so alert reduction efforts would be of great benefit to hospital staff members.

Methods: Prior to the alert reduction phase, a survey will be distributed among staff within our hospital system to determine satisfaction/frustration with alerts appearing immediately after the Epic implementation period. This survey will then be used to guide improvement efforts and target reductions in desired alert categories (drug-drug, drug-disease state, duplicate medication warning). A pivot table report would also be run to measure the override rates before the alert reduction phase, as well as after, to quantify the effect of both helpful and unnecessary alert changes made during the alert reduction phase. Some examples of unnecessary alerts include: prochlorperazine + metoclopramide, glipizide + weakness, ceftriaxone + pyelonephritis, and potassium chloride + dehydration. The alert reduction phase would consist of a coordinated effort between the members of the Epic and our hospital Willow teams to identify, improve the quality of, and reduce the quantity of alerts fired for providers when signing and verifying orders. After completion of the alert reduction phase, a satisfaction survey would once again be distributed to staff to help gauge the hospital and Willow team

improvement efforts. A pivot table report would also be run again to compare the overall number of alerts overridden, as well as quantify the number.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-376

Poster Title: Stress ulcer prophylaxis protocol's impact on intensive care unit patients followed through continuum of care: evaluating appropriateness of acid suppression therapy, costs and adverse events

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Jeaneen Datka

Purpose: Buckley et al, presented that 70% of general medical and intensive care unit (ICU) patients received inappropriate stress ulcer prophylaxis. Additionally, 73% to 90% of patients discharged from the hospital also received inappropriate stress ulcer prophylaxis. Yearly financial burden decreased by $200,000 in their hospital after initiation of a pharmacy driven protocol. Purpose of my project is to implement stress ulcer prophylaxis protocol which aims to reduce inappropriate use on ICU patients and followed to the general floor and/or upon hospital discharge. The impact of financial and potential adverse effects due to initiation of the protocol will also be evaluated.

Methods: A submission will be made to the Institutional Review Board for this project. Stress ulcer prophylaxis protocol provides indications (presence of at least one major or two or more minor risk factors) that will qualify patient for stress ulcer prophylaxis agent. Pharmacists will check for appropriateness by evaluating stress ulcer prophylaxis utilization daily. If the patient no longer has risk factors, the pharmacist will discontinue stress ulcer prophylaxis in 48 hours, unless the physician specifically request continuation. Pharmacists will complete a progress note in patient's chart to notify the physician. The progress note will reiterate the protocol's major and minor risk factors. Pharmacists will begin implementation of protocol with ICU patients and follow through transitions of care (general floor) and upon discharge. The resident will review the ICU patients throughout the continuum of care and assess the application and impact of the protocol. Additionally, the resident will gather data from medical records including patient demographics, concomitant illnesses, length of stay, duration of therapy, costs, adverse events from stress ulcer prophylaxis discontinuation, bleeding risks, major risk factors and minor risk factors. Data will be compared from this prospective study with two

retrospective studies also completed at our hospital to assess appropriateness of stress ulcer prophylaxis, cost reductions and adverse events from protocol initiated discontinuation.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 10-377

Poster Title: Impact of pharmacist-led medication discharge counseling and follow-up calls on medication adherence rate among patients with cerebrovascular accident, transient ischemic attack, and carotid stenosis

Primary Author: Hyesun (Juliette) Kim, Cabell Huntington Hospital, WV; **Email:** juliet.kim@chhi.org

Additional Author (s):
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Crystal Heise
Mitzi Beckett

Purpose: Cerebrovascular accidents (CVA) including ischemic, hemorrhagic strokes and transient ischemia attacks (TIA) are the third most common cause of death in the United States with a recurrence rate of 10 to 20 percent within 90 days from an initial episode. Medication adherence is essential for the secondary prevention of CVA and TIA, and non-adherence to medication is a risk factor for recurring vascular events or death. The purpose of the study is to assess the influence of pharmacist-led discharge counseling and follow-up calls after CVA, TIA and carotid stenosis on medication adherence rate.

Methods: The study will be a single-center two-phase study comparing medication adherence before and after implementation of pharmacist-led discharge counseling. The first phase will be a retrospective chart review that will include patients at least 18 years of age who were admitted to Cabell Huntington Hospital (CHH) with primary diagnosis of initial or recurrent CVA, TIA or carotid stenosis episodes between August and October 2016. The prospective phase arm will include patients at least 18 years of age who are admitted to CHH with primary diagnosis of initial or recurrent CVA, TIA or carotid stenosis between November 2016 and January 2017. The patients in the prospective phase will receive pharmacist-led detailed discharge counseling on medications, and a follow-up call 7-days post-discharge. During the follow-up call, the patients will be asked a series of questions regarding their medication adherence. The primary outcome is the rate of medication adherence which will primarily be measured by prescription filled history provided by DrFirst, a medication history data tool, or by information obtained from the patients' pharmacies. The secondary outcome is the rate of re-hospitalization within 90 days

post-discharge. The adherence rate from the arms will be compared to evaluate the effectiveness of pharmacist-led discharge counseling and follow-up calls on the medication adherence rate.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 10-378

Poster Title: Alternative dosing strategy of acyclovir in obese patients

Primary Author: Christopher Fitzpatrick, Cabell Huntington Hospital, WV; **Email:** christopher.fitzpatrick@chhi.org

Additional Author (s):
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Hasan Koc
Todd Gress

Purpose: A recent prospective, controlled study published by Turner et al suggested that morbidly obese patients who are treated with IV acyclovir based on current recommendations using ideal body weight (IBW) experience lower systemic exposure compared to normal weight patients dosed by total body weight (TBW). In addition, they suggested that using an adjusted body weight (AdjBW) in morbidly obese patients may result in comparable exposure seen in normal weight patients. The purpose of this study is to compare overall systemic exposure of IV acyclovir in obese patients dosed using AdjBW versus normal weight patients using TBW.

Methods: This single-center, prospective, case-controlled study will evaluate a novel dosing strategy in obese patients compared to standard dosing in normal weight patients. Blood samples will be collected prior to administration of acyclovir and at 10 different times following administration. To be included, patients must: be 18 years of age or older, have an expected hospital stay of greater than 24 hours, receive acyclovir as part of their routine care, and have a BMI greater than 30 kg/m² for obese patients or BMI less than 30 kg/m² for normal weight patients. Exclusion criteria includes: patients who received acyclovir or a similar guanosine nucleoside analog in the previous 24 hours, serum creatinine greater than 1.4 mg/dL at time of drug administration, hypersensitivity to acyclovir, requiring vasopressors in the previous 48 hours, receiving medications that interact with acyclovir, pregnant or breast feeding, burns greater than 30 percent, or amputation. The primary outcome to be assessed will be systemic clearance of acyclovir in obese and normal weight patients. Secondary outcomes will include maximum concentration of acyclovir in obese and normal weight patients, time above 50 percent inhibitory concentration (IC50) for varicella zoster virus and herpes simplex virus, time to maximum concentration of acyclovir in obese and normal weight patients, volume of

distribution of acyclovir in obese and normal weight patients, and incidence of acute kidney injury.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-379

Poster Title: retrospective evaluation of osmotic therapy in middle cerebral artery (MCA) ischemic stroke

Primary Author: Temeka Lewis, Charleston Area Medical Center, WV; **Email:** temeka.lewis@camc.org

Additional Author (s):
Lisa Robinson

Purpose: Currently the only intervention shown to improve functional outcomes in large hemispheric ischemic stroke is a decompressive hemicraniectomy within 48 hours. There are no studies in the primary literature to date evaluating the efficacy of osmotic therapy in MCA ischemic stroke. However, current guidelines recommend the use of osmotic agents for the management of cerebral edema and this is primarily based on the observation of ICP reduction. The objective of this study is to determine the safety and efficacy of osmotic therapy in patients with MCA ischemic stroke.

Methods: This will be a retrospective study of patients who presented to Charleston Area Medical Center (CAMC) General Hospital from September 30, 2015 through September 13, 2016 with a middle cerebral artery (MCA) ischemic stroke identified by ICD-10 diagnosis codes. This primary outcome of this study will be to evaluate if osmotic therapy (hypertonic saline or mannitol) decreases 90 day mortality in patients with MCA ischemic strokes. A secondary outcome of this study will be to evaluate if osmotic therapy improves functional outcomes at hospital discharge. This study will alsso evaluate the incidence of acute kidney injury, hospital acquired pneumonia (HAP), ventilator associated pneumonia (VAP), central line associated blood stream infection (CLABSI), catheter associated urinary tract infection (CAUTI), deep venous thrombosis (DVT), or pulmonary embolism (PE). The results of this study may better define the role of osmotic therapy in patients with MCA ischemic stroke.

Results: In progress

Conclusion: In progress

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-380

Poster Title: Effects of obesity on treatment outcomes for the inpatient management of skin and soft tissue infections

Primary Author: Brianna Thompson, Charleston Area Medical Center, WV; **Email:** brianna.thompson@camc.org

Additional Author (s):
John Crowley

Purpose: Skin and soft tissue infections (SSTI) encompass infections of varying severity with different management strategies. Many patients are treated empirically with antibiotics and appropriate use of these antibiotics is necessary for treatment success. With an increasing obesity epidemic and a lack of dosing recommendations for this patient population, providing optimal antibiotic regimens can be challenging. The primary objective of this study is to determine the effects of obesity on the clinical outcomes for patients admitted to a tertiary healthcare system for the inpatient treatment of a SSTI.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify patients who were admitted to two hospitals within a tertiary healthcare system with an admitting diagnosis of a SSTI receiving at least one dose of an antibiotic. This study will compare clinical outcomes in obese patients versus non-obese patients. Demographics including age, sex, height, and weight will be obtained for each patient who meets inclusion and exclusion criteria. Additional data collected will include laboratory data at the time of SSTI diagnosis, physical findings of infection, hospital and intensive care unit (ICU) length of stay, antibiotic regimens and durations, incision and drainage documentation if performed, and in-hospital mortality. All patient information will be de-identified during data collection. After data collection, the Body Mass Index (BMI) for each patient will be calculated using the demographic information obtained. Patients with a BMI above 30 kilograms per square meter will be classified as obese. After classifying patients as obese and non-obese, the differences in hospital length of stay and duration of antibiotic therapy, in addition to ICU length of care, in-hospital mortality, readmission for SSTI management, and the appropriateness of antibiotic therapy as determined by adherence to the Infectious Diseases Society of America SSTI guidelines will be assessed.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-381

Poster Title: Analgosedation versus conventional sedation in the elderly medical intensive care unit patient

Primary Author: Keesha Kline, Charleston Area Medical Center, WV; **Email:** keesha.kline@camc.org

Additional Author (s):
Brian Hodges

Purpose: Analgosedation is the technique of prioritizing pain management for intensive care unit sedation. The use of opioids for analgesia and sedation as opposed to conventional sedative-hypnotic medications has emerged in guidelines, but evidence to support these recommendations is limited. Pharmacokinetic and pharmacodynamic properties play a vital role in the selection of sedation medication. Elderly patients are particularly challenging, as altered renal and hepatic function, hypoalbuminemia, complex comorbidities, and polypharmacy influence the response and ability to tolerate opioid versus sedative-hypnotic medications. This study aims to evaluate the effectiveness and safety of analgosedation compared to conventional methods within the critically-ill elderly population.

Methods: This study will be submitted to the institutional review board for approval. The electronic medical record system will identify patients with pharmacy charges for fentanyl, propofol, dexmedetomidine, midazolam, or lorazepam continuous infusion admitted to medical intensive care unit between January 1 and December 31, 2015. Data such as patient demographics, dose, frequency, and duration of medications used for sedation, reversal, agitation, delirium, and pain, home medication lists, renal and hepatic function on admission, and severity of illness will be collected. All data will be de-identified and maintained confidentially. ICU length of stay, time to successful extubation, and hospital length of stay will be analyzed as primary outcomes to determine the effectiveness of analgosedation compared to conventional methods. Secondary outcomes of safety and efficacy will be measured using adjunctive sedation or rescue medication use, as well as percentage of time within Richmond Agitation Sedation Scale goals of -2 to 0 within the first 72 hours of sedation.

Results: This abstract is submitted as research in progress; results will be reported as they become available.

Conclusion: This abstract is submitted as research in progress; conclusion will be reported as results become available.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-382

Poster Title: Evaluation of medication errors after transition of electronic medical records in a multi-hospital system

Primary Author: Michelle Howerton, Charleston Area Medical Center, WV; **Email:** michelle.howerton@camc.org

Additional Author (s):
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Tracy Hall

Purpose: Electronic medical records (EMRs) are now widely used in healthcare, having transitioned from the use of paper documentation. Other electronic technology accompanied this switch, including computerized prescriber order entry (CPOE) and bar-code scanning technology. Many studies have looked at the relation between the adoption of these systems and a reduction in medication errors but few have evaluated the transition from one EMR to another. The purpose of this study is to examine the impact that transitioning from Soarian/Siemens EMR to the Cerner Millennium integrated EMR will have on medication errors and the impact on CPOE and bar-code scanning systems.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. Data for medication errors will be collected from employee-submitted error reports from the Quantros reporting system. Data to be collected includes: event date, patient type, medical record/account number, type of event, harm category from system, department involved, hospital, nature of event, medications involved, and error description. Medication errors will be assessed as medication errors per patient hospital days to normalize the number of errors. Bedside bar-code scanning medication administration data, records for CPOE orders entered, and medication written orders will be collected from reports generated from the EMR system being used during each time period. Data will include percentage of charted medications, patient ID overrides, total product overrides, wrong patient scans, patient ID overrides after incorrect scans, total potential saves, total saves, total pharmacy orders scanned, and total pharmacy orders placed via CPOE. All information will be collected for each of the four hospitals in the system. Medication error rates and percent of orders placed by CPOE and scanned to pharmacy will be compared in the 2.5 months before and after the

transition as well as the same time period the previous year. Differences in bar-code administration overrides will also be assessed for those time frames.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 10-383

Poster Title: Impact of pharmacist interventions on potentially inappropriate medications in elderly patients in the outpatient clinic

Primary Author: Daniel Wolverton, Charleston Area Medical Center, WV; **Email:** daniel.wolverton@camc.org

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Purpose: Elderly patients represent the largest users of prescription medications. Given this fact, it is likely that suboptimal prescribing occurs. Potentially inappropriate medications (PIM) may lead to increased adverse effects, healthcare use and even morbidity. Several methods can be used to identify PIM with one of the more common being the Beer's Criteria. Another aspect, medication regimen complexity, also affects medication use by making it harder for patients to use their medicines appropriately. This quality improvement project will assess the effectiveness of pharmacist interventions in reducing these medications and improvements in regimen complexity in the ambulatory clinic setting.

Methods: Pending Institutional Review Board approval, this project will be conducted at two outpatient clinics at a large community teaching hospital. One clinic site is a geriatrics primary care clinic and the other an internal medicine primary care clinic. The primary objective will be to measure the effectiveness of pharmacist interventions at discontinuing potentially inappropriate medications via provider recommendations and improving overall regimen complexity. This information will be used to further refine the process to have a greater impact on patient care. Patients over age 65, who use 10 or medications on a daily basis and are seen on a regular basis in either clinic will be included. PIMs will be identified by selecting medications most commonly used in practice from the Beer's Criteria. Data to be collected and maintained confidentially will include: age, sex, PIMs identified, whether the PIMs are dosed on a scheduled or as needed basis, whether a recommendation was made to change the PIM dosing parameters, presence of PIM and daily dose 30 days after clinic visit. Medication regimen complexity score at baseline and 30 days after clinic visit will also be evaluated.

Descriptive statistics will be used to explore changes in PIMs and regimen complexity after the implementation of the new process.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-384

Poster Title: Evaluation of the safety of NPH and glargine insulin in a mixed ICU population

Primary Author: Kevin Ordons, Charleston Area Medical Center, WV; **Email:** kevin.ordons@camc.org

Additional Author (s):
Brian Hodges

Purpose: Prior poster abstracts presented at the Society of Critical Care Medicine Annual Congress have compared the use of NPH and glargine insulin among critically ill patients. Results of this research have not been consistent. The objective of this study is to compare the incidence of hypoglycemia in patients receiving NPH as a basal insulin compared with patients receiving insulin glargine in a mixed medical and surgical ICU population at a large, tertiary care center.

Methods: This will be a retrospective study of patients who were admitted to the intensive care units at CAMC Memorial or General hospital from September 2014 to September 2015. Patients who received NPH or glargine insulin (at least 10 units in a 24 hour period) and were admitted to the ICU for at least 72 hours will be included. Patients will be excluded for type 1 diabetes or an ICU admission for a hyperglycemic crisis. The primary objective is to compare the incidence of hypoglycemia in medical and surgical critical care patients treated with NPH and patients treated with glargine. Secondary objectives are to compare the incidence of hyperglycemia, glycemic variability, length of stay, and mortality. Subjects will be identified by medication orders for NPH or glargine insulin. All data will be collected from the electronic health record. Comparison of continuous variables will be evaluated by the Student t-test or the Wilcoxon rank-sum test. Discrete variables will be evaluated by the Fisher exact test or Chi-square test.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 10-385

Poster Title: Antipsychotic use for the treatment of delirium in elderly ICU patients: The importance of continued assessment for indication

Primary Author: Nishika Patel, Charleston Area Medical Center, WV; **Email:** nishika.patel@camc.org

Additional Author (s):
Brian Hodges

Purpose: Delirium can have serious ramifications such as long term cognitive impairment and increased mortality. Many clinicians start antipsychotics for elderly patients experiencing delirium in the intensive care setting. The rate at which these are continued beyond care transitions has not been measured. This issue is further compounded by the black box warning for antipsychotics having the propensity to cause an increased risk of death in elderly patients with dementia related psychosis. The objective of this study is to evaluate how often prolonged use of antipsychotics beyond transition from the ICU occurs at Charleston Area Medical Center.

Methods: This study is a retrospective chart review and will be submitted to the Institutional Review Board for approval. Electronic medical records will help identify patients who were 65 years or older and were started on an antipsychotic during their intensive care stay. The following data will be collected: patient age, length of stay in the ICU, home medications, ICU medications, floor medications, discharge medications, admit diagnoses, QTc intervals, and EPS incidence. Patients with a primary CNS pathology as well as patients previously on mood stabilizers, antiepileptics, or antipsychotics will be excluded; this will be done to avoid potential confounders. The addition of an antipsychotic during the intensive care stay will be considered a surrogate for the formal diagnosis of ICU delirium as diagnoses are not always documented.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 10-387

Poster Title: Pain Management of Sedated Patients within a Critical Access Hospital

Primary Author: Seth Lilly, Jefferson Medical Center, WV; **Email:** seth.lilly@wvumedicine.org

Additional Author (s):
Jonathan Kline

Purpose: Patients often need sedation to provide comfort and care during recovery. In such situations, strategies to assure adequate pain management are put in place. These types of strategies include pain medication orders being placed before or concurrently as sedation occurs. Because sedation often leaves expressing and assessing pain difficult for both the patient and staff, it is important pain management is placed before the patient is sedated. The purpose of this study is to evaluate pain management put in place before or concurrently with sedation placement within a critical access hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a retrospective, observational study looking at patients placed within the intensive care unit starting January 1st, 2016 through September 30, 2016. All patients will be screened for sedation procedures. Information collected from these patients include if a pain medication order was placed, pain assessments made while patient was undergoing sedation, time before or after sedation occurred that a pain management order get placed, type of pain medication given for the patient undergoing sedation, dosing of pain medication, patient allergies, and indication for sedation. Explanation of why a patient was not put on pain medication, if applicable and provided, will also be recorded. Patient identifiers will be removed to assure confidentiality. All data will be analyzed using appropriate statistical tests.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-388

Poster Title: Examination of time to first antibiotic administration in patients with sepsis

Primary Author: Benjamin Robertson, Marshall Univeristy / King's Daughters Medical Center, WV; **Email:** benjaminbrobertson@cedarville.edu

Additional Author (s):
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Brittany RIley
Lori-Belle Slone
Jessica Sobnosky

Purpose: The surviving sepsis campaign bundle states that antibiotics should be administered within three hours, while the guideline defines the goal of therapy to be antibiotic administration within the first hour after recognition of sepsis. Current literature states that early antibiotic administration improves patient outcomes. However, despite the importance of early antibiotic administration, treatment may be delayed for various reasons. The purpose of this study is to assess the time interval between recognition of sepsis and the administration of the first dose of antibiotics with a goal of identifying barriers to optimal treatment of sepsis patients.

Methods: This study protocol was approved by the Institutional Review Board prior to commencement. A retrospective chart review will be performed on patients with a diagnosis of septicemia or severe sepsis, excluding pediatric or pregnant patients. Patients were selected using DRG ID MS870, MS871, or MS872 who were admitted during June and July 2016. All data will be collected from the electronic medical record and will be de-identified. The following data will be gathered: patient age, sex, weight, date of admission, date and location of septicemia or severe sepsis diagnosis, SIRS and qSOFA criteria identified on presentation, initial antibiotics, number of antibiotics, time first antibiotic was ordered, verified and administered, type and amount of fluids patient received, time and type of cultures obtained, ICU admission date if applicable, vasopressors initiated and time started, and adherence to the hospital's approved sepsis order set. The primary endpoint is the time to first dose of antibiotic and the secondary endpoints are adherence to the sepsis order set and the surviving sepsis bundle.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 10-389

Poster Title: Impact of pharmacy intervention of opioid use associated with fibromyalgia patients in a community pharmacy setting

Primary Author: Andre Watson, Marshall University School of Pharmacy/Valley Health, WV; **Email:** watson154@marshall.edu

Additional Author (s):
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Megan Peterson

Purpose: Community pharmacies are aware of the need to establish a standard of care for patients with chronic pain management. Fibromyalgia is described as a chronic, widespread pain that is centrally amplified and associated with hyperalgesia. Opioids are prescribed without concern of published randomized trials that examine the efficacy of therapy, which leads to negative outcomes such as minimum pain relief. The pharmacist direct involvement with fibromyalgia patient care can improve quality of life. The purpose of this study is to determine if the pharmacist modification of therapy is correlated with positive patient outcomes regarding fibromyalgia pain.

Methods: This study will be submitted to the institution's IRB for approval. Fibromyalgia patients that are being seen at a federally-qualified health center will be identified by using a M79.7 ICD10 code search throughout the database as well as other subset codes associated with fibromyalgia. This group of patients will be identified based on opioid use with fibromyalgia. Patients that meet the criteria will be asked to participate in this study and given a survey to complete. Surveys will be given at baseline, 3 months, and 5 months to measure widespread pain and quality of life during the study as primary endpoints. Physicians will be encouraged to initiate changes in therapy per titration protocol developed by the pharmacist to decrease opioid use. Morphine equivalents will be calculated at baseline and during titration to measure change in doses. Alternative therapy will be initiated simultaneously with the titration protocol using serotonin-norepinephrine reuptake inhibitors or tri-cyclic antidepressants. The actual study will be executed from December 1, 2016 through March 31, 2017. The patient therapy will be optimized and tailored towards each patient unique disease state.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 10-390

Poster Title: Pharmacist role in monitoring patients in a Medication-Assisted Treatment program at risk for developing metabolic syndrome

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Additional Author (s):
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Purpose: Approximately 9.8 million adults suffer from mental illness. Of those, 2.3 million met the criteria for substance use disorder. Medication adherence is vital for treatment success in both patient populations. There are several barriers that contribute to nonadherence. One major problem with mental illness treatment is metabolic syndrome associated with antipsychotic therapy. Metabolic syndrome is defined as a group of risk factors for developing heart disease, diabetes, and stroke. This study is to determine if the role of pharmacy education therapy modification can alleviate the stress of metabolic syndrome in patients taking antipsychotics participating in the Medication-Assisted Treatment program.

Methods: This study will be submitted to the institution's IRB for approval. Patients being treated with antipsychotic medications will be identified through Valley Health's Medication-Assisted Treatment (MAT) programs. . Once identified patients will be given two questionnaires to complete concerning medication adherence and compliance. Drug Attitude Inventory and the Brief Adherence Rating Scale will be used. Questionnaires will be administered at baseline, three months, and five months. Also, adherence monitoring will be measured by pharmacy refill records provided by Valley Health Intergy software. Patient education will be provided to participants in the MAT program. For patients on antipsychotic therapy monitoring and education for metabolic syndrome will be initiated. Weight, BMI, and waist circumference will be measured at each visit every week. Blood pressure will be measured at baseline and every two weeks. Glucose and lipid panel will be measured at baseline and every three months. If patients develop signs and symptoms of metabolic syndrome, a recommendation to the physician will be made to properly discontinue current antipsychotic therapy, initiate alternate antipsychotic medication, and start appropriate medication to control metabolic risk factor. A

retrospective analysis of the previous three months will be conducted to determine the effectiveness of pharmacy intervention on metabolic syndrome and adherence. The retrospective arm will be completed August 2016-October 2016 and the prospective arm will take place November 2016-March 2016.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-391

Poster Title: Evaluation of a nasal swab methicillin-resistant Staphylococcus aureus (MRSA) polymerase chain reaction (PCR) test for guiding de-escalation in patients with pneumonia

Primary Author: Sarah Dunaway, St. Mary's Medical Center, WV; **Email:** sarah.dunaway@st-marys.org

Additional Author (s):
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Stephanie Giancola

Purpose: A recent retrospective study completed at St. Mary's Medical Center (SMMC) concluded that the use of nasal swab MRSA PCR testing might be a useful stewardship tool to guide discontinuation of anti-MRSA antibiotics in patients with pneumonia, demonstrating 98.6 percent negative predictive value for ruling out MRSA pneumonia. Subsequently, SMMC added this test to the existing pneumonia protocol (OS270), which allows for vancomycin to be discontinued when the MRSA PCR is negative. The primary objective of this study is to compare vancomycin days of therapy (DOT) before and after the addition of the nasal swab MRSA PCR to OS270.

Methods: This is an Institutional Review Board-approved, single-center, retrospective chart review study. Adult patients admitted to SMMC with healthcare-associated pneumonia or community-acquired pneumonia and OS270 initiated will be screened for inclusion. Additional inclusion criteria will be vancomycin ordered and nasal swab MRSA PCR collected within 24 hours of admission. Patients will be excluded if they have MRSA infection elsewhere (such as a skin infection) when the nasal swab MRSA PCR was collected. Patients admitted prior to and after addition of the nasal swab MRSA PCR to OS270 will serve as the control and intervention groups, respectively. The primary outcome will be vancomycin DOT. Secondary outcomes for assessment will include in-hospital all-cause mortality and length of stay. Data collection from the electronic medical record will consist of age, sex, admit date, discharge date, admit from the community or from a nursing home, comorbidities, allergies, tube feeding status on admission, unit or floor to which the patient was admitted, CURB-65 score, previous antibiotic exposure within 90 days, WBC count, maximum temperature, vancomycin start and stop date, PCR date and result, and respiratory culture results and specimen type if obtained.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 10-392

Poster Title: Impact of procalcitonin on antibiotic exposure, hospital length of stay, and 30-day readmission rate in patients with a chronic obstructive pulmonary disease (COPD) exacerbation

Primary Author: Casey Fitzpatrick, St. Mary's Medical Center, WV; **Email:** casey.fitzpatrick@st-marys.org

Additional Author (s):
Kara Orwig

Purpose: The unnecessary use of antibiotics in COPD exacerbations increases healthcare costs, promotes bacterial resistance, and causes avoidable adverse effects. Previous studies show that procalcitonin guided therapy greatly reduces antibiotic exposure in patients with a lower respiratory tract infection without negatively impacting outcomes. The 2016 GOLD recommendations are vague regarding the utilization of antibiotics in COPD exacerbations but contend that procalcitonin may be valuable in the decision to use antibiotics. The purpose of this study is to evaluate the impact of procalcitonin guided therapy on antibiotic exposure, hospital length of stay, and 30-day readmission rate in COPD exacerbation patients.

Methods: This is an Institutional Review Board-approved, single-center, retrospective chart review study. Patients 18 years or older, who were admitted to St. Mary's Medical Center (SMMC) with a COPD exacerbation, will be included. Patients will be excluded if they were admitted to an intensive care unit or if they had other sources of infection. A pre-intervention group will consist of patients admitted between March and December 2015, before the implementation of procalcitonin at SMMC. An intervention group will include patients admitted between March and December 2016, after implementation of procalcitonin testing. Hospital policy is based on the suggestion that a procalcitonin level less than 0.05 micrograms per liter likely indicates the absence of a bacterial infection and discontinuation of antibiotics is strongly encouraged. The primary outcome to be assessed will be the impact of procalcitonin values on the number of antibiotic days of therapy (DOT). Secondary outcomes will include hospital length of stay (LOS) and 30-day readmission rates.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 10-393

Poster Title: Evaluation of vancomycin use for pediatric patients at a large academic medical center

Primary Author: Sheng Da Ma, West Virginia University Healthcare, WV; **Email:** sma1@mix.wvu.edu

Additional Author (s):
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Purpose: Vancomycin is a glycopeptide antibiotic used to treat gram-positive infections. Excessive use can lead to increased healthcare costs, the emergence of resistant organisms, and place patients at increased risk of adverse effects. Patients should be de-escalated to a more specific antibiotic regimen once cultures and laboratory tests identify a particular pathogen. Although a full course of vancomycin therapy is warranted for patients with culture-proven infections, the picture is less clear for those with negative cultures beyond 72 hours. The purpose of this study is to describe the indications for vancomycin use beyond 72 hours at a large academic medical center.

Methods: This study is approved by the Institutional Review Board. This study is a retrospective chart review using electronic medical records in reverse chronological order from June 30, 2016 until 150 patients are accrued. All pediatric patients discharged from WVU Medicine Children's who received greater than 72 hours of vancomycin therapy will be included. Exclusion criteria consist of non-pediatric services, maternal infant care unit patients, pediatric patients with an open chest, and Hematology/Oncology service patients with febrile neutropenia. Data collected included age, weight, gender, unit location, antimicrobial allergies, prescribing service, indication for continued therapy, length of therapy past 72 hours, number of levels, culture results, type of IV line, and infectious disease consult recommendations. Descriptive statistics will be utilized.

Results: This abstract submission is for research in progress.

Conclusion: This abstract submission is for research in progress.

Submission Category: Oncology

Submission Type: Descriptive Report

Session-Board Number: 10-394

Poster Title: Retrospective Review of Rituximab Utilization and Impact on Reimbursement

Primary Author: Jonathan Angus, West Virginia University Healthcare, WV; **Email:** jon.h.angus@gmail.com

Additional Author (s):
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David Cecere

Purpose: The purpose of this project was to evaluate the use of rituximab throughout our institution and perform a cost analysis specifically focusing on reimbursement for inpatient use. The primary objective of this project was to describe inpatient use of rituximab by service, provider, and indication. Secondary objectives included: the comparison of inpatient versus outpatient utilization among specific indications and providers, assessment of reimbursement amounts according to location (inpatient vs. outpatient**)** and by insurance provider (Medicare, Medicaid, Private Insurance, and Health Maintenance Organizations), and evaluation of the need for formulary restriction of rituximab prescribing.

Methods: This project consists of a retrospective chart review from October 2015 to July 2016 of adult patients who received rituximab at our institution either in the inpatient setting or in the outpatient infusion center. Patients who were greater than or equal to 18 years old and who had received greater than or equal to one dose of rituximab were included in the chart review. Patients admitted to pediatric services, patients receiving rituximab in the outpatient pediatric infusion center, and patients receiving rituximab as an investigational drug were excluded. The data collected based on these criteria showed the prescribing patterns of rituximab and the associated cost.

Results: Currently, at our institution, the inpatient use of rituximab is unrestricted and its use is seemingly increasing. Rituximab is an expensive medication, with an estimated actual wholesale price (AWP) of $928.88 per 100 mg vial and $4644.42 per 500 mg vial. Reimbursement for this medication varies drastically depending on insurance payer as well as patient location (inpatient versus outpatient). There were 41 inpatient administrations and 457

outpatient administrations. Many of the inpatient administrations were for unapproved indications, ordered by off-service prescribers, and not reimbursed by a carve-out within the DRG.

Conclusion: The current inpatient prescribing practices regarding rituximab at our hospital necessitate the implementation of specific ordering restrictions to help facilitate its use. Shifting the majority of inpatient rituximab infusions to the outpatient setting or admitting patients under "observation status" may be ways to mediate the high cost and lack of reimbursement experienced during inpatient administration of this medication. Rituximab remains a powerful therapeutic agent with a variety of applications.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 10-396

Poster Title: Recognition, monitoring, and treatment of QTc prolongation secondary to selective serotonin reuptake inhibitors and serotonin norepinephrine reuptake inhibitors in medicine and trauma patients.

Primary Author: Bethany Miller, West Virginia University Medicine, WV; **Email:** bethany.miller@wvumedicine.org

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Purpose: The purpose of this study is to assess the recognition, monitoring, and treatment of QTc prolongation at J.C. Ruby Memorial Hospital in medicine and trauma patients presenting on selective serotonin reuptake inhibitors (SSRI) and serotonin and norepinephrine reuptake inhibitor (SNRI) therapy.

Methods: This is a retrospective cohort study of adult patients who were admitted to a medicine or surgical service at J.C. Ruby Memorial Hospital between July 1, 2013 and July 1, 2016 and were on an home SSRI or SNRI. Patients were excluded if they had a congenital heart condition, a cardiac abnormality at baseline, or no baseline EKG within 24 hours of admission. A cardiac abnormality at baseline included any patients who had heart failure, coronary artery disease, valvular disorders, or any other abnormality that would affect the heart. Patients were grouped according to admitting service, either medical or surgical, and 50 patients were collected in each arm for a total of 100 patients included in the study. Data collected for this study will be analyzed by descriptive statistics.

Results: This medication use evaluation is still currently being conducted and finalized results will be analyzed and presented.

Conclusion: It is anticipated this project will identify if a problem exists with recognizing, monitoring, and treating QTc prolongation at J.C. Ruby Memorial Hospital and if there is an observed difference in the above parameters between the medicine or the trauma services.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 10-397

Poster Title: Comparison of regular versus rapid acting sliding scale insulin on the incidence of hypoglycemia

Primary Author: Andrew Allison, WVU Medicine, WV; **Email:** andrew.allison@wvumedicine.org

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Purpose: Sliding scale insulin regimens are often used as the sole method to provide glucose control in hospitalized patients despite being strongly discouraged by the American Diabetes Association. Regular and rapid acting insulin are both commonly used in these regimens. While both products lower blood glucose levels, they have markedly different pharmacokinetic parameters. The primary objective of this study was to determine which insulin product led to higher rates of hypoglycemia within a large academic medical center.

Methods: The institutional review board approved this comparison study. A retrospective chart review was completed from October 1, 2015 to July 31, 2016 of inpatients that received sliding scale insulin. Seventy patients met inclusion criteria. There were 35 patients per group receiving either rapid or regular acting insulin. The following data points were collected: age, sex, weight, hemoglobin A1c, sliding scale intensity, type of sliding scale insulin, use of basal or scheduled mealtime insulin, total dose of basal insulin administered 36 hours prior to a hypoglycemic event, total mealtime insulin dose administered 24 hours prior to a hypoglycemic event, number of hypoglycemic episodes within 2 hours of a sliding scale dose, number of hypoglycemic episodes likely attributable to sliding scale insulin, major attributable adverse events due to hypoglycemia, corticosteroid use while inpatient, and use of other diabetic medications while inpatient or outpatient that could cause hypoglycemia. Data was collected from the electronic medical record and maintained on a spreadsheet. A comparison of demographics was completed to determine if significant differences were present between study groups. Primary and secondary objectives were analyzed using descriptive statistics, comparing the event rates between groups. All identifying patient information was removed from study data to preserve privacy.

Results: Seventy patients were included in the study: 44 percent female, 56 percent male. Of all prescribed sliding scale insulin regimens, 81 percent utilized conservative dosing in the regular insulin group and 76 percent utilized conservative dosing in the rapid insulin group. The conservative sliding scale regimen included insulin administrations of two to six units depending on the patient's blood glucose level. Patients in the rapid insulin group were prescribed basal insulin more often, both inpatient and outpatient, compared to the regular insulin group (66 percent versus 37 percent outpatient respectively, 69 percent versus 31 percent inpatient respectively). Twelve hypoglycemic episodes, defined as blood glucose less than 70 milligrams per deciliter, were identified in the regular insulin group. Eleven hypoglycemic episodes were identified in the rapid insulin group. Of these 23 episodes, only one could likely be attributed to rapid acting sliding scale insulin. No patients experienced coma, death, or seizure due to hypoglycemia in our study.

Conclusion: There appears to be no difference in the rate of hypoglycemia due to regular or rapid acting sliding scale insulin regimens in our study population. A similar number of hypoglycemic events were identified in each group, with only one episode likely due to rapid acting sliding scale insulin. The lack of attributable events could be due to any of the following: properly managed sliding scale regimens, choice of regimens that were too conservative, or inclusion of stable patients. Further studies should be completed to evaluate other patient populations that may be more prone to hypoglycemic events.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-398

Poster Title: Evaluation of four-factor prothrombin complex concentrate use in an academic medical center

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Purpose: Four-factor Prothrombin Complex Concentrate (4F-PCC) is recommended by the American College of Chest Physicians (CHEST Guidelines) for the rapid reversal of anticoagulation in warfarin-associated major bleeding. Regarding the direct factor Xa inhibitors apixaban, rivaroxaban, edoxaban, and fondaparinux, no FDA-approved antidotes currently exist. Since data are limited, it is unclear whether 4F-PCC is effective treatment in life-threatening bleeds or reversing the effects of factor Xa inhibitor anticoagulants, but it may be a reasonable option given the lack of effective alternatives. The primary objective of this study is to qualify the use of 4F-PCC with or without vitamin K.

Methods: This is a retrospective chart review looking at patients who received 4F-PCC between January 1, 2016 and June 30, 2016. Descriptive statistics are being utilized to analyze the collected data. Collected information includes patient demographics, allergies, 4F-PCC dose and indication, ordering service and treatment floor where patient received 4F-PCC, number of doses given, INR(s) immediately prior to and within 72 hours of 4F-PCC administration, use of vitamin K administration with 4F-PCC, anticoagulant requiring reversal, thrombotic event within 30 days, if antithrombotic medication was used after 4F-PCC, transfusion requirements, and incidence of re-bleeding within 24 hours. Duration of therapy as well as length of hospital stay were assessed.

Results: Research-in-progress.

Conclusion: Research-in-progress.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 10-399

Poster Title: Evaluation of ketamine, propofol, or both for procedural sedation in the emergency department

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Purpose: Procedural sedation is the process of utilizing low doses of sedatives or dissociative agents with or without the use of analgesics to improve comfort during painful procedures. Ketamine and propofol for procedural sedation have been a popular alternative to high doses of opioids. The American College of Emergency Physicians clinical policy regarding procedural sedation in the emergency department provided a level A safety recommendation for the use of ketamine in pediatrics and for propofol in pediatrics and adults. Purpose of this study is to evaluate safety and appropriate dosing strategies for these agents alone or in combination.

Methods: This is a retrospective chart review of patients admitted to the emergency department between January 2016 to June 2016 and given ketamine, propofol, or both for procedural sedation. Primary outcomes include the rate and type of adverse events associated with each agent or in combination. Safety endpoints are the frequency of significant hemodynamic and respiratory compromise and respiratory intervention when needed. Time to sedation resolution will be evaluated as a secondary outcome. Data points measured will include dosing, repeated doses if needed, time to sedation resolution, procedure, adverse events reported, recorded agitation, respiratory intervention, and vasopressor use.

Results: Data collection in process, results pending. Preliminary results include < 1% (3 of 61) patients have experienced an adverse event and ~30% (18 of 61) required respiratory intervention of nasal cannula or non-rebreather.

Conclusion: To be determined after completion of data collection.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 10-400

Poster Title: Evaluation of fosfomycin use at an inpatient academic medical center.

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Purpose: In 2012, an institution-specific urinary tract infection (UTI) guideline was implemented. This guideline promoted fosfomycin as one of three preferred first-line antibiotics for the treatment of uncomplicated cystitis. After implementation of the UTI guideline, fosfomycin use has increased. The primary objective of this evaluation was to determine if fosfomycin use was empiric or pathogen-driven. Secondary objectives included determining if a catheter was present and if fosfomycin was given first or as a subsequent antibiotic.

Methods: This evaluation was an Institution Review Board-approved retrospective chart review of patients receiving at least one dose of fosfomycin at our institution in June 2016. There were no exclusion criteria. Data collected included age, gender, allergies, presence of a catheter, prescribing service, number and frequency of doses, urine culture results, and antibiotics administered within 72 hours of a fosfomycin dose. Descriptive statistics were used to analyze collected data.

Results: One hundred patients were evaluated: 11 male and 89 female. Twenty seven percent of patients were given fosfomycin in the emergency department. Thirty-two percent of patients received pathogen-driven (targeted) treatment with fosfomycin. In those receiving targeted therapy, the most commonly isolated organism was Escherichia coli (37.5 percent). Eighteen percent had a catheter present. Thirty one percent of patients received other antibiotics within 72 hours of a fosfomycin dose. Of these patients, only 6 percent received fosfomycin as the initial agent for a urinary tract infection.

Conclusion: This review showed that fosfomycin is being used most commonly in women. The majority of patients received one dose of fosfomycin empirically. Escherichia coli was the most commonly isolated organism in patients receiving pathogen-driven therapy. Few patients had a catheter present on the same day that the fosfomycin dose was administered. If other antibiotics were given within 72 hours, the majority of the fosfomycin doses were given as a subsequent antibiotic.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 10-401

Poster Title: Evaluating intravenous vancomycin dosing in hemodialysis at an academic medical center

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Purpose: There is currently no national consensus amongst institutions on the dosing and monitoring of vancomycin in hemodialysis (HD), however, several strategies have been proposed. Dosing should take place after dialysis and frequent monitoring of levels has been recommended due to the varying effects of hemodialysis on drug removal. Current vancomycin dosing guidelines at our institution state that doses should be given after the dialysis session, and levels may not be needed if the patient is clinically improving. The primary outcome was to evaluate IV vancomycin dosing strategies utilized in patients with ESRD on HD at an academic medical center.

Methods: The study design was an IRB approved retrospective chart review. Patients must have received ≥2 doses of vancomycin to be included. Intra-operative and one time ED vancomycin doses were excluded. Patients were identified via running a HD report on EPIC in addition to ICD 9 code for end stage renal disease (ESRD). Data was pulled from January to July 2016, and patients were retrospectively reviewed in reverse chronological order until a sample size of 50 was encountered. Data collected included vancomycin indication, number of levels drawn per admission, pre or post dialysis level, level value, vancomycin dose, dose changes after level, days of therapy, missed vancomycin doses, gram positive organism, minimum inhibitory concentration, and patient length of stay. Descriptive statistics was utilized to summarize the data.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-001

Poster Title: Comparison of acute kidney injury in hospitalized patients receiving combination vancomycin and piperacillin-tazobactam versus vancomycin and cefepime

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Purpose: Hospitalized patients who develop acute kidney injury (AKI) have an increased risk of mortality, length of stay, and costs. The combination of vancomycin and an anti-pseudomonal beta-lactam, such as piperacillin-tazobactam or cefepime, is commonly used as empiric antimicrobial therapy in hospitalized patients. The nephrotoxic risk of vancomycin has been well documented in literature, but the incidence of nephrotoxicity occurring with concomitant use of piperacillin-tazobactam or cefepime has been limited in comparison. The purpose of this study is to compare the incidence of AKI occurring in patients receiving the combination of either vancomycin and piperacillin-tazobactam or vancomycin and cefepime.

Methods: This will be a retrospective, cohort study of patients admitted between January 2014 and August 2016. The primary endpoint will be to compare the incidence of AKI in patients who were either treated with a combination of vancomycin and piperacillin-tazobactam or vancomycin and cefepime. Secondary endpoints include time to AKI from initiation of combination antimicrobials, hospital length of stay, mortality, and incidence of AKI in relation to: age, duration of treatment, receiving greater or equal to 4 grams per day of vancomycin, maintaining vancomycin trough greater than 15 mcg/ml, and use of concomitant nephrotoxic agents. Inclusion criteria includes patients 18 years of age and older, who have received treatment with vancomycin in combination with either piperacillin-tazobactam or cefepime for at least 48 hours during admission. This study aims to achieve a total of 150 patients per study group. Exclusion criteria includes: baseline serum creatinine of greater than or equal to 1.5mg/dL, creatinine clearance less than or equal to 60mL/min, history of end-stage renal disease, treatment with more than one dose of intermittent piperacillin-tazobactam infusion (30 minute infusion), pregnant patients, incarcerated patients, and patients with inadequate laboratory data to determine AKI. Paired t-test will be used to compare normally distributed,

continuous data. Pearson chi-squared test will be used to compare nominal data, and Wilcoxon-Signed Rank test will for ordinal data. This study is pending IRB approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-002

Poster Title: Clinical outcomes in patients with reported beta-lactam allergy presenting with septic shock

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Purpose: Septic shock is the systemic manifestation of infection resulting in continued hypotension despite adequate fluid resuscitation. Delay in the administration of appropriate empiric antibiotics is associated with increased mortality in septic shock, and broad-spectrum antibiotics such as piperacillin/tazobactam are the empiric treatment of choice. Patients with reported allergies to beta-lactams may have a lower likelihood of receiving appropriate empiric therapy, which may lead to adverse outcomes. This study aims to determine if a reported beta-lactam allergy in patients who develop septic shock is associated with worse outcomes versus patients with no reported antibiotic allergies.

Methods: We will perform a comparison of patients with septic shock between reported beta-lactam allergy and no allergy. Data will be collected through a retrospective, systematic chart review at Antelope Valley Hospital from July 2011 through August 2016. The primary endpoint will be survival to discharge. Secondary endpoints will include hospital length of stay, ICU length of stay, cumulative days of antibiotic exposure, development of acute kidney injury (AKI), death within 48 hours, time to death, readmission for the same infection within 4 weeks, and development of Clostridium difficile, Vancomycin-resistant enterococci, or methicillin-resistant Staphylococcus aureus infection within 4 weeks. We will also look at mortality between patients with a reported allergy who receive beta-lactams, who receive alternative therapy, and patients without reported allergy. Baseline characteristics will include demographics, positive cultures, any resistant pathogens, APACHE II score, qSOFA score, allergy descriptions, other allergies, initial lactate, AKI-causing drugs, time from fluid resuscitation to vasopressors, maximum rates, number, and duration of vasopressors, and antibiotic use, indication, and escalation. Inclusion criteria will include septic shock, ICU admission, at least one dose of antibiotics, vasopressor use, and 18 years of age or older. Exclusion criteria will include

pregnancy, prisoners, and other causes of shock. A student t-test will be used to assess numerical variables, and a chi-squared test will be used for nominal variables. IRB approval is currently pending.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Descriptive Report

Session-Board Number: 11-003

Poster Title: Safe Medication Transitions Program (SafeTMed) Timeline: Inspired, Created and Implemented by Residents

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Purpose: Medication-related readmissions occur in up to 20% of all readmissions. Pharmacists play an important role in ensuring safe transitions to and from the hospital by providing medication reconciliation and education at admission, transfer, discharge, and post-discharge. Cedars-Sinai Medical Center (CSMC) began and expanded its transitions of care program through interdisciplinary collaboration led by pharmacy residents. Through longitudinal research studies and tests of change led by PGY-1 and PGY-2 residents, CSMC's program was able to grow to 15 full time employees (pharmacists and technicians) in 2016.

Methods: CSMC started focusing efforts on evaluating patient-centered services in transitions of care. In an effort to gather evidence of various types of TOC services, projects were incorporated into the administrative rotation as small-scale projects and were also assigned as longitudinal research projects determined by the Chief Pharmacy Officer when residents expressed interest.
Program Initiation:
CSMC's first transitions of care (TOC) pilot began on the heart failure unit in 2010. Realizing the need to evaluate multiple TOC services at various phases of care, CSMC implemented small initiatives through resident projects to get quick turn around on potential areas of interest (Etchelles E, et al, 2015). Small test of change with rapid process improvement methods provided a valuable learning experience for both the residents and the leadership team. Resident projects add to the growing body of knowledge of what it takes to grow and scale a program and sustain the services.
Program Expansion and Optimization

With the knowledge gained from small resident projects, CSMC's TOC program was able to evaluate all phases of a patient's care and gathered evidence of each phase. Many residents involved in TOC initiatives became TOC pharmacists and continued to help create the tools to continue to expand and optimize the program. They also serve as mentors for the current residents leading TOC projects.

Results: CSMC's TOC program was scaled to various clinical services and hospitalist groups through resident projects. In 2011, the first project was in collaboration with hospitalists in medicine units to provide medication reconciliation on admission and discharge counseling. It was expanded to other units due to its success and resulted in creation of a dedicated TOC pharmacist. In 2012, admission medication reconciliation was integrated into decentralized pharmacist workflow through training modules prepared and conducted by residents. Results of multiple major projects justified the expansion of the program and addition of staff. In 2013, a resident conducted a study evaluating the discharge reconciliation process for skilled nursing facilities (SNF). Study results demonstrated that pharmacist interventions reduced SNF readmissions and justified additional 0.5 full time equivalence (FTE). In 2015, residents developed a methodology toolkit for documenting drug-related problems and potential readmissions avoided, also known as "Medication-related Acute Care Episode (MACEs)". Results from MACEs study was found to be cost-effective, resulting in an addition of 4 FTEs. Recently in 2016, residents piloted the MACEs methodology as a multi-center study in collaboration with 8 other institutions. This national project demonstrated that the CSMC methodology was applicable to other TOC programs of various sizes and settings.

Conclusion: CSMC's TOC program was inspired by the Chief Pharmacy Officer and implemented by residents. The efforts of the residents highlighted the challenges and led to program growth and lessons learned. Positive results found during each initiative was shared with senior leadership, which provided additional FTE support to continue optimize the program. Resident's small projects over the years continue to add to the knowledge of safe transitions and will continue to be a methodology used to study future opportunities.

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 11-004

Poster Title: Targeting Patient Pain: a Pharmacist-driven Hospital Pain Management Service

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Purpose: The Joint Commission recommends that all healthcare institutions have a program in place to address patient pain. When reviewing Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores for the institution, a need for a pain service was identified, coinciding with the Joint Commission recommendation. The purpose of this study is to compare patient satisfaction scores, length of stay, and opioid usage, before and after the implementation of a pharmacist-driven hospital pain management service.

Methods: This study will be submitted to the hospital Institutional Review Board for approval. The method of identifying patients for pain management will be multi-factorial. The pharmacist will review the surgery schedule of the previous day and visit each patient to address post-operative pain. The pain pharmacist will take pain management requests via phone and from log sheets in nursing units. Patients will be included if they are expected to have a hospital stay of more than 24 hours. Patients that are younger than 18, on a ventilator with sedation, or pregnant, will be excluded. The pain management consult will include the pharmacist assessing patient pain and identifying pain goals. The pharmacist will give the patient a pain information sheet that describes types of pain and how to communicate about pain. Patients will be followed until their pain is at goal for 48 hours or until the patient is discharged. Post discharge calls will be made to assess the patient's satisfaction of the pain management program and to inquire about post-discharge pain. The following data will be collected: patient demographics, mode of pain management request, pain goals and scores, interventions, and patient satisfaction scores. The data collected will be compared with matched patients that were admitted into the hospital before the intervention was implemented. Pain education will be provided to pharmacists, nurses, and surgeons.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Descriptive Report

Session-Board Number: 11-005

Poster Title: Assessing pharmacist involvement in an asthma quality improvement project implemented in a pediatric emergency department

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Purpose: In a 2006 survey, less than 50 percent of persistent asthmatic children seen in the emergency department (ED) were on controller medications, with less than 20 percent prescribed a controller subsequently. Based on the current literature and the National Institute of Health recommendations on the management of persistent asthma, an interdisciplinary asthma quality improvement project (asthma QIP) was initiated at a 31-bed pediatric ED to improve controller medication prescribing practice, provide proper patient education, and ensure controller medication availability for patients prior to discharge. This report describes the asthma QIP, with a focus on pharmacist activities in this multidisciplinary approach.

Methods: Persistent asthmatic patients presenting to the ED are identified and screened by the triage nurse using the Mini Pediatric Asthma Control Tool (MPact). Once an MPact is activated, an alert is populated on the ED tracking board for the physician, respiratory therapist, and pharmacist. The ED team will first address any acute exacerbations of asthma with rapid reliever medications and systemic corticosteroids. After patient examination and confirmed diagnosis of persistent asthma, the ED physician then initiates orders for respiratory and pharmacy consult, a short-acting beta agonist, and controller medications. Upon respiratory consult order, the respiratory therapist provides the first dose of inhaled corticosteroid in-house and educates the patient and family on inhaler technique and asthma action plan. The pharmacy consult order prompts the ED pharmacist to perform patient medication reconciliation, provide patient education on rescue versus controller inhalers, and dispense the properly labeled medications to patients prior to discharge. Due to the high census and acute nature of the ED, the controller inhalers are dispensed as a relabel of the in-house product,

rather than being processed through the patient's insurance, to avoid delay in patient throughput.

Results: There were 4113 ED patients with an ICD-10-CM diagnosis code related to asthma in the first year of asthma QIP implementation. Asthma diagnoses of these patients included mild intermittent, mild persistent, moderate persistent, severe persistent, unspecified, exercise induced bronchospasm, cough variant asthma, and other asthma. As a result of the asthma QIP, 590 controller medications were dispensed from the ED pharmacy directly to the patient prior to discharge. Of those patients, 316 had a pharmacy consult documented in their electronic medical records. Per protocol, a pharmacy consult is required for every activity related to controller medication dispensing. It was observed that a physician may order a controller medication without initiating a pharmacy consult, and that pharmacists would often times give patient education on controller mediations without the official consult order. Based on the Pediatric Health Information System (PHIS) data, from October 2015 through March 2016 of the asthma QIP, 41 asthma patients returned to the ED for the same diagnosis within 30 days. The PHIS data also reports that from October 2014 through March 2015, a similar time frame prior to implementation of the asthma QIP, there were 58 asthma patients returning to the ED in 30 days.

Conclusion: The public PHIS data suggests that there appears to be a difference in the number of asthma ED revisits during the winter periods before and after the asthma QIP implementation. This absolute reduction in number of ED revisits should be investigated further, as there can be many potential explanations. There is an opportunity for improvement in the documentation of pharmacist involvement in the medication reconciliation, education, and dispensing activities related to controller medications. Further evaluation is also needed to assess the cost effectiveness of direct controller medication dispensing to the patient in the ED, as well as effect of pharmacist involvement in the asthma QIP on the number of ED revisits the asthma management program may reduce.

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-006

Poster Title: Effectiveness of vancomycin administered as continuous infusion (CIV) versus intermittent infusion (IIV) for the treatment of methicillin-resistant staphylococcus aureus (MRSA) bacteremia in pediatric patients

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Purpose: The 2011 IDSA guidelines for treatment of MRSA infections in adults and children recommend a target trough of 15-20 mcg/ml to achieve a ratio of area under the curve (AUC) over minimum inhibitory concentration (MIC) greater than 400. However, achieving the recommended trough goals in children has been difficult in clinical settings. The guideline further recommend against CIV due to lack of clear benefit and time above MIC has not been found to be the primary predictor of efficacy. The objective of this study is to compare the effectiveness of vancomycin CIV versus IIV in pediatric patients with MRSA bacteremia.

Methods: Pending IRB approval, this retrospective chart review will include randomly selected patients aged 6 months to 18 years old who received vancomycin as either IIV or CIV for treatment of MRSA bacteremia at a pediatric hospital between January 1st, 2012 to June 30, 2016. Data abstraction from patients' electronic health record includes: vancomycin regimen including dose, frequency, timing and method of administration, demographics such as age, height, weight and gender, vital signs including temperature and heart rate, laboratory markers such as serum creatinine, complete blood count, vancomycin serum level, as well as microbiology data including vancomycin MICs. The primary objective of the study is to assess differences in outcome between the different method of vancomcyin administration including: duration of bacteremia, duration of fever, hospital length of stay (LOS), intensive care unit LOS. Secondary outcome measures include differences in vancomycin exposure defined as AUC/MIC ratio and highest serum levels collected within 72 hours of initiation. Additionally, differences in treatment-related adverse effects such as nephrotoxicity, defined as an increase in serum creatinine greater or equal to 0.5 mg/dL, or 50% increase from baseline, development of rash, thrombophlebitis, loss of IV access will also be examined. Differences between the study group

will be analyzed using Chi Squared for qualitative data and t-test for quantitative data. Statistical analysis will be performed with Excel, Microsoft Office 2010.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 11-007

Poster Title: Effect of discharging patients with a prescription for an antipsychotic on alcohol related readmissions in patients suffering from schizophrenia and alcohol use disorder

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Purpose: The rate of alcohol-use disorder (AUD) in the general population is 6.8 percent, a rate which increases to 43 percent in patients suffering from concurrent schizophrenia. The treatment of schizophrenia and AUD individually is challenging and the effect of antipsychotics on alcohol consumption is unclear. The primary objective of this study was to evaluate whether discharging patients, suffering from both schizophrenia and AUD, with a new prescription for an antipsychotic will reduce future alcohol-related readmissions and if antipsychotics will prolong the time between admissions. The secondary objective was identifying potential factors that may influence readmission rates.

Methods: This retrospective cohort study spanned from January 1, 2005 to December 31, 2015 at Olive View Medical Center in Sylmar, CA. After an IRB protocol was approved by both Western University of Health Sciences and Olive View Medical Center, a query based on International Classification of Diseases-9/10 codes for schizophrenia was conducted to identify admissions related to schizophrenia and alcohol-related events. Over 16,000 patients were screened. Inclusion criteria included: documented diagnosis of schizophrenia, current alcohol abuse (either by Alcohol Use Disorders Identification Test-C score greater than 3 for females and 4 for males or chart documentation), and no current use of an antipsychotic medication on admission. Exclusion criteria included: those under the age of 18, those without patient data available, and those without diagnoses of schizophrenia or without readmissions due to alcohol-related events. Data on demographics, patient medical and social history, comorbidities, urinary toxicological screening results, admission date, date of readmission, medications, and discharge diagnoses was collected. Independent t and Mann-Whitney tests were performed on continuous variables and chi-square tests were performed on predictor

variables for readmission such as discharge with an antipsychotic medication, gender, smoking history, homelessness, concurrent depression, and inpatient psychiatric evaluation. Statistical significance was set at a P value less than 0.05.

Results: A total of 108 patients met inclusion criteria (n equals 84 for patients discharged with antipsychotics and n equals 24 for patients discharged without antipsychotics). Baseline characteristics (age, gender, social history, comorbidities) were not statistically significant between the two cohorts. For the primary objective, patients discharged with antipsychotics had significantly lower alcohol-related readmissions (13 percent) compared to those who were discharged without an antipsychotic (33 percent, P equals 0.033, OR equals 0.30, 95 percent CI 0.10 to 0.87). Median days between admission and the first alcohol-related readmission were 152 days and 86 days for those discharged with an antipsychotic and those who were not, respectively (P equals 0.66). Subgroup analysis for potential factors that may influence readmission did not reveal any statistical significance: male gender (P equals 0.067) homelessness (P equals 0.26), smoking history (P equals 0.79), concurrent depression (P equals 0.14), cocaine abuse (P greater than 0.99), and amphetamine abuse (P equals 0.65).

Conclusion: Alcohol related readmission rates were significantly lower in patients discharged with antipsychotics than those who were discharged without antipsychotics. Time between admission and first readmission was not significant. This suggests antipsychotics upon discharge may have a positive effect on AUD and reduce future alcohol-related readmissions. Prospective studies and the inclusion of multiple institutions are necessary to substantiate these findings.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-008

Poster Title: Evaluation of an antimicrobial stewardship program on the utilization of high-cost anti-infectives

Primary Author: Michelle Do, Citrus Valley Health Partners, CA; **Email:** mdo050607@gmail.com

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Purpose: Antimicrobial stewardship programs (ASP) have shown a positive impact on health care systems by minimizing the rate of antibiotic resistance, reducing healthcare costs, and improving overall patient outcomes. The importance of ASPs has been recognized nationally by a multitude of organizations, including the Centers for Disease Control and Prevention, The Joint Commission, and the Centers for Medicare and Medicaid Service. Previous studies at Citrus Valley Medical Center (CVMC) showed a significant reduction in piperacillin/tazobactam utilization post-ASP. We aim to extend the evaluation of ASP efforts by assessing the utilization of high-cost anti-infectives, focusing on tigecycline and daptomycin.

Methods: This is a retrospective chart review that is anticipated to be submitted the Institutional Review Board for approval. Patients will be included in this study if they are 18 years of age or older, were admitted to CVMC, and have received at least one inpatient dose of either tigecycline or daptomycin. Cases will be identified via the electronic medical record system by active orders for the targeted anti-infectives and relevant data will be collected. All data will be de-identified in order to maintain patient confidentiality. Data collected will include: patient age, gender, height, weight, allergies, hematology results, chemistry results, microbiological results, physical examination findings, clinical notes, and current medications. The primary outcome of the study is to compare the pre-ASP (January through March 2014) utilization of tigecycline and daptomycin to the post-ASP (January through March 2017) utilization. The secondary outcomes of the study include clinical response, adverse drug-related events, and all-cause mortality. Data will be analyzed using Microsoft Excel and GraphPad; a p-value of 0.05 or lower will denote statistical significance.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 11-009

Poster Title: Evaluation of Antimicrobial Stewardship Program on Levofloxacin Utilization and Patient Outcome

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Purpose: The primary objective of the study is to assess concerted antimicrobial stewardship efforts on levofloxacin utilization. The secondary objectives are to evaluate multifaceted aspects of patient outcome, such as mortality, clinical status, and therapy-related toxicities.

Methods: A retrospective chart review was conducted at Citrus Valley Medical Center, whereby patients were identified via levofloxacin use pre- and post-implementation of the Antimicrobial Stewardship Program, in February 2014 and February 2015 respectively. Patients included were at least 18 years and received inpatient levofloxacin. Patients who received entirely outpatient levofloxacin were excluded. A total of 679 admissions were reviewed, of which 491 patients met the inclusion criteria. Student t-tests, Mann-Whitney, and Chi-Square tests were utilized in the statistical analysis conducted by GraphPad Prism. Statistical significance for two-tailed p-values will be defined a priori p less than 0.05.

Results: There was no statistically significant difference in levofloxacin utilization between pre- and post-implementation of ASP (p equals 0.29). There was also no statistically significant difference in mortality, clinical stability, clinical response, and therapy-related toxicities.

Conclusion: The results from the study did not demonstrate any difference in average levofloxacin utilization or patient outcome post-implementation of ASP. The results may also suggest benefits in targeting initiation of levofloxacin. Further studies should be replicated with other types of high-use antimicrobial agents.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-010

Poster Title: Impact of resident pharmacist intervention on acute kidney injury (AKI) progression and patient outcomes

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Purpose: To compare the number of interventions and rate of progression to higher stages of acute kidney injury (AKI) with a new pharmacy workflow as compared to our current practice of renal dose adjustments and if this can avoid the associated costs of more advanced renal dysfunction.

Methods: This retrospective study will compare a new pharmacy workflow conducted on patients admitted from November 1, 2016 to January 31, 2017 with patients at the same institution admitted from November 1, 2015 to January 31, 2016. As a part of daily workflow, a PGY-1 Resident Pharmacist is responsible for evaluating patients who have had a 0.3 mg/dL increase in serum creatinine (SCr) in the last 24 hours while admitted and determine if an intervention could prevent progression to a higher stage of AKI as defined by KDIGO (Kidney Disease: Improving Global Outcomes). Exclusion criteria includes patients < 18 years old, admitting diagnosis of end-stage renal disease (ESRD) or AKI, receiving dialysis, pregnancy, and receiving chemotherapy, current or received in the last year. The types of intervention include renal dose adjustment, discontinuation of agents based on manufacturer and institution guidelines, alternative therapy, adjustment or addition of IV fluids, and evaluation of concomitant nephrotoxic agents. Identified interventions will be approved by attending physicians on service before recommendations are implemented. Primary outcomes are the number of interventions made and rate of progression to higher stages of AKI (with or without dialysis). Secondary outcomes are length of hospital stay, type of interventions, and transfer to higher level of care.

Results: n/a

Conclusion: n/a

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-011

Poster Title: Efficacy and safety of glucagon, high-dose insulin, and intravenous lipid emulsion in beta blocker and calcium channel blocker toxicity

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Purpose: Due to the lack of established practice guidelines, studies are warranted to guide the management of cardiotoxicities due to beta blocker and calcium channel blocker overdose. This study will evaluate the efficacy and safety of glucagon, high-dose insulin (HDI), and intravenous lipid emulsion (ILE) as monotherapy or combination therapies for the treatment of cardiovascular toxicities attributed to beta blocker and calcium channel blocker overdose. Findings will be used to develop a treatment algorithm.

Methods: This study is a retrospective chart review and has been submitted to the Institutional Review Board for approval. Patients who presented to the Community Regional Medical Center Emergency Department from January 2013 to December 2016 with cardiotoxicity due to beta blocker or calcium channel blocker overdose, as defined by the International Classification of Diseases, 9th and 10th Revisions, Clinical Modification codes, will be identified through an institutional generated report and included in the data analysis. Primary endpoints include survival to hospital admission and all-cause mortality. Secondary endpoints include the incidence and nature of adverse effects associated with glucagon, HDI, and ILE. Descriptive statistics will be used to summarize the data.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 11-013

Poster Title: Evaluation of vancomycin dosing in critically ill patients receiving continuous venovenous hemodiafiltration

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Purpose: Continuous renal replacement therapy (CRRT) is often used in the management of critically ill patients with acute kidney injury. Vancomycin is an important antimicrobial agent and is commonly used for treatment of gram positive infections. Optimal dosing of vancomycin is essential to avoid treatment failure, development of resistance, and drug toxicities. The objectives of this study are to evaluate the adequacy of current vancomycin dosing practice in critically ill patients receiving continuous venovenous hemodiafiltration (CVVHDF) therapy mode of CRRT in a tertiary medical center and to determine an optimal dosing regimen.

Methods: This study was submitted to the Institutional Review Board for approval. A retrospective chart review will be conducted of all adult patients who received intravenous vancomycin therapy in the intensive care unit (ICU) of Community Regional Medical Center while undergoing CVVHDF for at least 48 hours during the period from April 1, 2013 to August 31, 2016. Patients who received vancomycin more than 36 hours prior to initiating CVVHDF, patients with CVVHDF interruptions totalling more than 6 hours in any 24-hour period, those with burns, and pregnant women will be excluded. The following data will be collected: age, weight, sex, main diagnosis, Acute Physiology and Chronic Health Evaluation score, vancomycin dosing regimen, vancomycin doses administered, vancomycin blood level(s), time when blood samples were drawn, indication for vancomycin therapy, the start and stop dates of vancomycin therapy, start and stop dates of CVVHDF, the times of CVVHDF interruptions, dialysate rates, ultrafiltration rates, blood flow rates, replacement fluid rates, results of microbiological tests and cultures, serum creatinine, blood urea nitrogen, 24-hour urine output, serum albumin, total number of days in the ICU, immediate cause of death (if applicable) and

ICU survival data. Data will be analyzed, mean pharmacokinetic parameters will be calculated, and dosing recommendations will be developed.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-014

Poster Title: Octreotide medication use evaluation at Desert Regional Medical Center

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Purpose: Octreotide is a somatostatin analog that has been used in patients with gastrointestinal (GI) hemorrhage. There is limited evidence currently to support the use of octreotide in non-variceal GI bleeds due to its vasoconstrictive properties. This vasoconstriction limits splanchnic blood flow that ultimately reduces portal vein hypertension. Additionally, the frequent shortages of octreotide have contributed to increased drug costs. The purpose of this study is to evaluate the appropriateness of octreotide use at Desert Regional Medical Center (DRMC) in order to limit costs and to deliver safe and effective care for our patients.

Methods: A retrospective chart review will be performed using Crimson Continuum of Care to identify patients who have been admitted to DRMC with GI hemorrhage between July 2015 - June 2016. Inclusion criteria: patients greater than or equal to 18 years of age with GI hemorrhage due to any cause who have received at least one dose of octreotide. Exclusion criteria: patients less than 18 years of age, patients with acromegaly, carcinoid tumors, vasoactive intestinal peptide tumors, gastroenteropancreatic neuroendocrine tumors, refractory diarrhea associated with chemotherapy or acquired immunodeficiency syndrome, acute graft versus host disease, malignant bowel obstruction, sulfonylurea-induced hypoglycemia, thymic malignancies, congenital hyperinsulinism, ectopic Cushing's syndrome, hypothalamic obesity, postgastrectomy dumping syndrome, small bowel fistulas, or Zollinger-Ellison syndrome. We will be reviewing appropriateness of indication, dose, route, and duration of octreotide therapy.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-015

Poster Title: Retrospective review of a pharmacist led medication refill authorization protocol to improve practice performance

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Purpose: Medication refill requests place a burden on physician practices and consume a large amount of daily workload for staff. The medication refill process involves evaluations that requires clinical expertise and a dedicated time component. This process is universal in primary care offices and represents a predictable point of connection between the patient and healthcare provider that delivers a valuable opportunity to address pertinent patient care needs. We aim to quantify the impact of a pharmacist led collaborative practice platform with a comprehensive management scope to improve quality measures and efficiency, while reducing utilization and cost.

Methods: An interdisciplinary team consisting of primary care nursing, support staff, physicians, pharmacists, administration, and information technology (IT) developed an evidence-based protocol for centralized medication refill. This protocol was approved and implemented with a physician champion in March 2015. The protocol was then integrated within our electronic medical record (EMR), NextGen and initially implemented with a physician champion in March 2015. This program is currently scaled to include 16 employee group physicians. The refill clinic process algorithm was adapted from Riege's study on pharmacy refill clinics within the U.S. Navy. Each refill request goes to the refill team and is evaluated by trained pharmacy technicians working under the supervision of clinical pharmacists. After a thorough profile review, the technicians will authorize the refill per protocol when patient meets all applicable criteria. Concerns or discrepancies found are sent to a pharmacist for further review. Statistical analysis will be performed on all data from the implementation of the protocol to the end of

October 2016. We will analyze the impact of our pharmacist led medication refill authorization protocol on reduction of prescription volume, volume and outcomes of prior authorizations, identification of patients in need of office visit, identification of patients in need of lab work, use of electronic prescription (eRx) prescribing versus other methods, and the driving shift to 90 day supply for chronic medications.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-016

Poster Title: Impact of clinical pharmacists in managing chronic obstructive pulmonary disease (COPD) patients

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Purpose: Center for Disease Control indicates that COPD affects over 32 million people in the United States and is the 3rd leading cause of death. COPD exacerbations are a common cause of hospitalization and readmission. Improvements in COPD management can produce significant benefits in cost control and enhance quality of life. Center for Medicare and Medicaid Services includes COPD outcomes as a clinical quality measure for hospitals requiring public reporting and affecting reimbursement rates. We aim to quantify the impact a pharmacist led collaborative practice platform with a comprehensive management scope to improve the patient experience, while reducing utilization and cost.

Methods: An electronic medical review will be performed to identify patients diagnosed with COPD. The following data will be collected: age, gender, smoking status, level of benefit, insurance, acute bed days, skilled nursing facility (SNF) bed days, comorbid conditions, urgent care (UC) visits, emergency department (ED) visit, and ED diagnosis. Patients will be enrolled into the COPD program by recent utilization or referral and then risk stratified based on acuity for comprehensive assessment and management. Current chronic disease management models require a face-to-face visit followed by need driven follow-up appointment versus telephonic support. All enrolled patients will receive a comprehensive medication review to evaluate appropriateness of current therapy, compliance, adherence, immunization status, smoking history and barriers to regimen optimization. The collaborative drug therapy management (CDTM) follows the 2016 Global Initiative for Chronic Obstructive Lung Disease guidelines, and will dictate treatment and care management recommendations. Statistical analysis will be

performed to identify the impact CDTM has on adherence, pre and post enrollment utilization, patient experience, clinical improvement and cost. In addition, we will analyze the effects that seasonal changes have on utilization.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-017

Poster Title: Evaluation of appropriateness and outcomes of stress ulcer prophylaxis in an intensive care unit

Primary Author: Jing (Sophie) Xia, Eisenhower Medical Center, CA; **Email:** jxia@emc.org

Additional Author (s):

Purpose: Stress ulcer prophylaxis is commonly administered to critically ill patients to prevent potential mucosal bleeding from the gastrointestinal (GI) tract. They are beneficial for patients indicated and are at high risk for stress ulcers. Inappropriate usage of stress ulcer prophylaxis may lead to harmful side effects such as nosocomial pneumonia and clostridium difficile infections. This study will evaluate the use of proton pump inhibitors and H2 blockers in patients in the intensive care unit and the corresponding patient outcomes. The values of pharmacist interventions to promote appropriate stress ulcer prophylaxis such as education, protocol development, and in-services will be discussed.

Methods: The retrospective study will extract patient data utilizing Eisenhower Medical Center's electronic medical record system (McKesson). Adults who were acutely admitted to the intensive care unit in and were treated with pantoprazole or famotidine would be identified and analyzed for appropriateness of prophylactic treatment. The following data will be recorded: patient's age, gender, admitting chief complaint, stress ulcer prophylactic drug, dose, duration, indication, and risk factors for stress ulcers. Data will be reviewed to determine if compliant with ASHP's stress ulcer prophylaxis guideline. Outcome measures would include proportion of patients with clinically important GI bleed, nosocomial pneumonia, clostridium difficile infections, and all-cause mortality during hospital stay. All data will be confidential, and recorded without patient identifiers. Data will be analyzed on Microsoft Excel and a stress ulcer prophylaxis protocol will be proposed.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-018

Poster Title: Antibiotic de-escalation after culture identification of methicillin sensitive Staphylococcus aureus bacteremia

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Purpose: The Centers for Disease Control (CDC) cite the inappropriate use of antibiotics as one of the leading actions associated with the development of antibiotic resistance. Antibiotic resistance has emerged as a national healthcare problem. The CDC recommends periodic antibiotic assessment and narrowing of empiric therapy to curb inappropriate use. As beta-lactam antibiotics are preferred over vancomycin in methicillin sensitive Staphylococcus aureus (MSSA) bacteremia, the purpose of this study will be to assess the value of a pharmacist antibiotic intervention program to reduce the inappropriate use of vancomycin.

Methods: A retrospective chart review will be conducted including patients 18 years or older on intravenous vancomycin with 2 or more positive blood cultures for MSSA at Eisenhower Medical Center from January 2016 to August 2016 in a group prior to pharmacy intervention implementation and compared to a prospective patient group after intervention implementation. Patients with comorbid infections with other bacterial species or MSSA will be excluded as will patients who were deceased before sensitivity results became available. Data to be collected will include patient name, medical record number, date and time intravenous vancomycin was started, date and draw time for the first blood culture, date and time when culture results were posted, date and time of antibiotic change, and antibiotic chosen for definitive therapy. Statistical analysis will be performed to determine whether a significant difference exists between groups before and after implementation of pharmacy intervention. The expected outcome is a reduction in time to narrow therapy following the implementation of a pharmacy intervention program. This drug use evaluation was exempt from IRB approval.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-019

Poster Title: Can the implementation of pharmacy-driven transitions of care processes promote adherence to long-acting injectable antipsychotics (LAI-APs) and reduce readmission rates?

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Purpose: Various studies have shown that the use of long-acting injectable antipsychotics (LAI-APs) have improved adherence and decreased hospitalization. Barriers such as cost and lack of appropriate transition and follow-up prevent patients from receiving LAI-APs. The objective of this study is to assess whether pharmacy-driven transitions of care processes can help improve adherence and ultimately, reduce readmission rates.

Methods: This study will be submitted for approval from the Institutional Review Board (IRB). All patients who are prescribed a LAI-AP, which include fluphenazine, haloperidol, paliperidone, risperidone, olanzapine, and aripiprazole, from November 1, 2016 to March 1, 2017 will be included in the study. Prior to discharge, the patient will be educated/counseled on the medication, and efforts will be made to transition the patient to a setting where the medications can appropriately be administered. Currently, patients being discharged from Glendale Adventist Medical Center are given the option to continue receiving their LAI-APs at the Outpatient Infusion Center (OPIC) on campus. For ease of follow-up and administration, patients will initially be referred to OPIC and an appointment will be made prior to discharge. Barriers including cost and adverse events will be assessed and efforts will be made to address them. Patients will be followed on a monthly basis to assess adherence, relapse, and readmission utilizing phone calls and chart reviews. Phone calls will remind patients of their appointment times and re-emphasize counseling points to improve adherence. The data will be reviewed to assess patterns in adherence and readmission.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-020

Poster Title: Impact of pharmacist involvement in collaborative heart failure management with updated guideline-directed medical therapy

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Purpose: Pharmacist involvement in heart failure (HF) management has increased across the continuum of care in an effort improve patient outcomes. Recently, opportunities for pharmacist involvement in optimizing HF management have expanded consequent to the release of 2016 guideline updates to pharmacologic therapy. Establishment of pharmacist-physician collaborative care and implementation of an updated guideline-directed medical therapy (GDMT) protocol within a pharmacist-run clinic marks our institution's most recent endeavor to improve outcomes of HF patients. The objective of this study is to measure the impact of pharmacist involvement in collaborative HF management on healthcare resource utilization, patient morbidity, and adherence to GDMT.

Methods: This study will be submitted to the Institutional Review Board for approval. An updated GDMT protocol incorporating latest guideline recommendations will be developed and implemented as the foundation of our institution's pharmacist-run HF clinic. Thereafter, a retrospective chart review will proceed on patients that were active participants of our clinic post-implementation of the updated GDMT protocol. All patients followed by our clinic will receive comprehensive HF education, medication reconciliation, and close monitoring of relevant laboratory values, vital signs, weight, symptoms, medication-related side effects, and drug interactions. Pharmacist-physician approved adjustments to HF therapy will be based on subjective patient reports and objective findings. The primary outcome measure will be 30-day hospital readmission rates and emergency department visits of patients followed by our clinic compared to that of non-clinic patients of a historical cohort, comprising of patients discharged from our institution with a primary diagnosis of HF one year prior to the present study. Secondary outcome measures will include changes in morbidity status and rate of adherence to GDMT. Clinic patients will be identified as those referred by providers from the cardiology

medical group with an established collaboration with the clinic. Non-clinic patients will be identified via the institution's electronic medical record system. All data utilized for this study will be maintained confidentially and recorded without patient identifiers.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-021

Poster Title: Impact of age on the management and outcome of urinary tract infection in the emergency department

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Purpose: Urinary tract infections (UTIs) are one of the three most commonly diagnosed and treated infections in the emergency department. However, the data on adherence to the UTI guidelines or on the effect of antimicrobial stewardship interventions for UTI in the emergency department setting is limited. The purpose of this study is to determine the epidemiology, prescribing patterns, and outcomes of patients presenting to the emergency department with UTIs grouped by age (18-50 versus over 50 years old) in order to identify areas for improvement in quality of care for age-specific patient groups.

Methods: Adult patients presenting to the emergency department between July 1, 2015 and June 30, 2016 with a diagnosis of UTI (ICD-9 and ICD-10 codes: 599 for UTI, 595.9 for cystitis, and 590.10 for pyelonephritis) were identified. A total of 500 patients were randomly selected using computer-generated randomization; of those, 150 were admitted to the hospital while 350 were discharged from the emergency department. Patients were excluded if any of the following was met: under 18 years old, transferred to an outside hospital, evaluation or treatment was refused by patient or family, or if the medical chart was not available. The medical records of eligible patients were reviewed for pertinent demographic and clinical data and recorded using a standardized data collection form with specific definitions for each variable. Notable variables collected include patient demographics, illness symptoms and duration, urinalysis results, urine culture and sensitivities, white blood cell count with differential, and presence of sepsis. To evaluate treatment, antibiotics given in the emergency department, inpatient antibiotics, discharge antibiotics, and treatment duration were recorded. Outcome endpoints were return visits to the emergency department within 72 hours and 30

days, and hospital readmissions within 30 days of discharge. Reasons for return within 72 hours or 30 days were documented. Statistical analysis will be performed using GraphPad Prism.

Results: Not applicable

Conclusion: Not applicable

Submission Category: I.V. Therapy/ Infusion Devices/ Home Care

Submission Type: Research-in-Progress

Session-Board Number: 11-022

Poster Title: Transitions of care: Optimization of home infusion therapy

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Purpose: Decreasing days spent in the hospital can help reduce physical, financial, and emotional burden placed upon patients and healthcare organizations. A pharmacist with knowledge of both inpatient services and home infusion therapies are optimally positioned to reduce the length of hospital stay through streamlining home infusion services. Review of the literature shows that a pharmacist's role in home infusion therapies and transitions of care varies widely and established metrics are needed. The objective of this study is to explore metrics that can establish measurable value to a pharmacist's role in transitions of care and outpatient parenteral therapies.

Methods: This study will be submitted to the Institutional Review Board for approval. Investigators will chart review patients, via electronic medical record, who received intervention from transitions of care pharmacists and a comparator group. The study population includes patients admitted to the inpatient setting who are treated with parenteral antibiotic therapy or parenteral nutrition therapy that have available therapeutically equivalent parenteral therapies for home use. The primary outcomes will be potentially avoidable days, defined as the amount of extra days patients stay in the hospital after they are dischargeable, or length of stay in the hospital. Secondary outcomes to collect and analyze include readmission to emergency department or hospital, cost savings, interventions made, adverse reactions, and appropriate usage of cultures and sensitivities.

Results: Not applicable.

Conclusion: Not applicable.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-023

Poster Title: Identifying risk factors for involuntary psychiatric holds in the emergency department

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Purpose: Patients presenting to the emergency department for psychiatric crises may have orders written for involuntary psychiatric holds. Patients placed under involuntary psychiatric holds require medical clearance prior to transfer to an outside psychiatric facility. The time required to obtain medical clearance may potentially prevent other patients presenting to the emergency room from gaining timely access to care. It can also lead to increased staffing and security requirements. Oftentimes, these crises may be preventable. The objective of this study is to determine if there are identifiable risk factors for an individual's likelihood of being placed under an involuntary psychiatric hold.

Methods: This study will be submitted to the Institutional Review Board for approval. Mental Health Services will provide two lists of patients: a list of patients seen by their service in the medical centers' emergency rooms, as well as a list of patients seen in the outpatient Mental Health Clinic. The following information will be collected: patient age, gender, psychiatric diagnosis, reason for psychiatric hold, classes of medication, and percentage of days patient has medication (determined based on frequency of medication refills). If available, the duration of treatment, psychosocial issues, use of oral versus long-acting injectable medication, history of substance abuse, history of previous involuntary psychiatric hold, previously missed or canceled appointments with psychiatry, therapists, or Chemical Dependence Recovery Program, and whether or not the patient is in transition between medications will also be collected. All data will be recorded without patient identifiers in order to maintain confidentiality. The reviewers will analyze and compare patient and treatment characteristics between the two groups to determine factors that may predict risk of involuntary psychiatric holds in the emergency department. The results of this study will be shared with the Psychiatry department in order to attempt to reduce the number of patients placed under involuntary psychiatric holds.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 11-024

Poster Title: Implementation of drug-disease interaction alerts in an integrated electronic health record

Primary Author: Michelle Park, Kaiser Permanente Pharmacy Informatics, CA; **Email:** michelleapark@gmail.com

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Purpose: Drug-disease interaction alerts notify providers of potential drug-disease interaction alerts in a health system utilizing computerized provider order entry. This alert category is less utilized than its counterpart, drug-drug interaction alerts. Drug-disease interaction alerts were implemented in an integrated electronic health record. However, large scale implementation of drug-disease interaction alerts would add to the volume of alerts seen by providers and contribute to alert noise. A systematic process utilized to prioritize drug-disease interaction alerts before and after implementation will be described.

Methods: The drug-disease interaction alerts were derived from an interaction knowledge base from a third party vendor. The available drug-disease interactions were screened based on clinical significance. A scoring tool was developed in cooperation with the third party vendor to evaluate the severity and relevance of a drug-disease interaction. The scoring tool was utilized to identify a subset of drug-disease interaction alerts that would be activated. Pre-implementation data was gathered by activating the drug-disease interaction module in the electronic health record, but keeping the alerts invisible to end users. The alerts were then made visible to end users and piloted in a designated region of the health system. Post-implementation data was gathered evaluating the rate of prescriber acceptance and override of the alerts. The overall alert rate (including other alert categories) was also assessed. The data was utilized to further refine the subset of activated drug-disease interaction alerts. The alerts were then activated in additional regions of the health system. An additional post-implementation analysis of the remaining drug-disease interaction alerts will be completed to determine the appropriateness of further refinement of the alerts.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-025

Poster Title: Cost impact of pharmacist-managed thyroid cancer monitoring service

Primary Author: Annie Tran, Kaiser Permanente Santa Clara, CA; **Email:** annie.tran@tu.edu

Additional Author (s):
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Purpose: Our medical center implemented a pharmacist managed thyroid cancer monitoring service five years ago and now manages 100 percent of the thyroid cancer patients. The service has been shown to improve patient adherence rates, reduce duplicate lab orders, and allow for cost reduction within the medical center. The objective of this study is to determine if there is a greater cost-reduction with our medical center's pharmacist managed thyroid cancer monitoring service when compared to Northern California Region's usual care by physician specialists.

Methods: This study will be submitted to the Institutional Review Board for approval. It will be a multi-center retrospective observational cohort study on the monitoring of thyroid cancer patients across Northern California. The pharmacist managed thyroid cancer monitoring service from our medical center will be compared to the usual care performed regionally by physician specialists. Regional data pull will be used to obtain Northern California patients who have a diagnosis of thyroid cancer. The following data will be collected: date of thyroidectomy, labs ordered and obtained (includes TSH, free T4, and thyroglobulin), patient adherence (defined as patient making the appropriate lab and office visits within 30 days of the scheduled date), hours a pharmacist or physician specialist spend on thyroid cancer patients weekly, and the number of provider encounters per patient. The number of units of time for each provider will be converted to the national median salary of the specific job title (defined as clinical pharmacists, nuclear medicine specialists, endocrinologists, and head and neck surgeons).

Results: n/a

Conclusion: n/a

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-026

Poster Title: Effects of increasing BMi on efficacy of dabigatran

Primary Author: Sanam Farokhi, Kaiser Permanente Woodland Hills Medical Center, CA; **Email:** sanam.h.farokhi@kp.org

Additional Author (s):

Purpose: Current dosing recommendations are dabigatran 150mg BID for all patients, excluding renal adjustments. This agent has a large volume of distribution. To date there has been no study to show that outcomes of breakthrough VTE/stroke will change in overweight patients. Excess body weight has been found to be a factor associated with breakthrough VTE/stroke. It is important to identify if excess weight will need dose adjustments or discontinuation of dabigatran. The purpose of this study is to assess whether in patients currently taking dabigatran, if there is an increased risk of VTE/stroke in higher BMI versus normal weight patients.

Methods: Study design is a retrospective cohort. Outcomes will be stratified based on patient's BMI subgroups (< 24.9, 25-29.9, 30-34.5, >35). Details of the methodology will be determined after consultation with a Biostatistician. Data source will be the electronic medical record (KP HealthConnect) and patients will be captured based on ICD 9/10 codes in patients currently on or previously treated with dabigatran 150 mg BID. Inclusion criteria includes patients > 18 years old with documented previous VTE or documented history of atrial fibrillation taking dabigatran 150 mg BID. Exclusion criteria excludes any history of clotting disorders, heart valve disorder, CrCl < 30 ml/min, active liver disease, pregnancy, co-administration with P-GP inhibitors, all prophylaxis dosing as they are only on the medication for a short duration of time. The primary objective of this study is to assess the risk of breakthrough VTE/stroke in patients currently on dabigatran 150 mg BID based on BMI. The secondary objective is all cause mortality in patients on dabigatran 150 mg BID based on BMI.

Results: in progress

Conclusion: in progress

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-027

Poster Title: Outcomes associated with oral versus subcutaneous methotrexate in patients with rheumatoid arthritis on biological disease-modifying antirheumatic drugs (DMARDs)

Primary Author: Ericka Huckle, Kaiser Permanente-Woodland Hills, CA; **Email:** erickahuckle@gmail.com

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Purpose: The purpose of the research is to determine whether treatment with subcutaneous methotrexate is associated with greater effectiveness compared to oral methotrexate in patients with rheumatoid arthritis. The primary objective is to determine the effectiveness of subcutaneous methotrexate versus oral methotrexate by assessing the time to initiation of biological DMARD (bioDMARD) therapy, and the use of other concurrent DMARD therapies.

Methods: This is a retrospective, observational cohort study in patients with rheumatoid arthritis currently undergoing treatment with a bioMARD. Patients at least 18 years of age with a history of methotrexate use in the Kaiser Permanente (KP) enterprise pharmacy information management system (ePIMS) will be included and stratified according to route of administration. Data to be collected from the KP electronic medical record will include: information at the time of initiation and termination of MTX therapy: erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), glucocorticoid use, use of other DMARDs, findings from serologic testing and erosive status of the disease. The reason for MTX failure and adverse effects associated with therapy will also be obtained from the electronic medical record. Other covariate data to be collected include age, sex, duration of rheumatoid arthritis, and length of MTX therapy. Prescription data from ePIMS will be used to evaluate the effectiveness of methotrexate. Continuous data will be analyzed using a t-test or ANOVA, categorical data will be analyzed using a chi-squared test, and ordinal data will be analyzed using a Wilcoxon-Rank Sum test. Time to treatment failure will be assessed by a log-rank Kaplan-Meier curve.

Results: Research in progress.

Conclusion: Research in progress.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-028

Poster Title: Evaluation of perioperative medication safety

Primary Author: Sharanjit Kaur, Kaweah Delta Health Care District, CA; **Email:** shakaur@kdhcd.org

Additional Author (s):
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Purpose: The purpose of this study is to evaluate the medication use process in the main operating room at Kaweah Delta Health Care District (KDHCD) using a targeted approach to identify errors in the medication use process, define areas for improvement, and increase interprofessional collaboration.

Methods: Approximately 70 surgeries will be observed during the time period of September 2016 thru January 2017 in the main OR at KDHCD. Data will be collected via observational checklists, interviews with OR staff, and review of current policies. Observational checklists were designed to evaluate both safe medication practices during a procedure as well as evaluate how medications are ordered, stored, and dispensed in general. Current practice will then be compared to best practice recommendations of the 2015 Association of Perioperative Registered Nurses (AORN) Guidelines for Perioperative Practice as the primary outcome of the study. The secondary outcome of this study is the number of observed unsafe conditions or medication errors noted during the study period. Identified gaps in best practice recommendations will be used to define future Medication Error Reduction Plan goals or other targeted strategies as deemed necessary by the organization.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-029

Poster Title: Assessment of procalcitonin use in a community, teaching hospital

Primary Author: Mee Moua, Kaweah Delta Health Care District, CA; **Email:** mmoua@kdhcd.org

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Purpose: The aim of this study is to assess the appropriateness of ordering procalcitonin and how procalcitonin results are used to determine the length of antibiotic therapy. The outcomes of this study will be used to develop a procalcitonin policy to guide and optimize antimicrobial use at our institution.

Methods: This is a retrospective, observational single-center study. The research protocol will be submitted to the Institutional Review Board for approval prior to beginning data collection. Subjects will be identified by querying the laboratory database for patients who have a resulted procalcitonin value. The electronic medical records will be used to collect data on patients 18 years of age or greater who have had at least one procalcitonin level drawn between June 2016 and August 2016 and were admitted to the hospital with an inpatient stay of at least 72 hours. The following data will be collected: demographic information, past medical history, past surgical history, number of procalcitonin ordered, location of the patient when procalcitonin was ordered, vital signs, laboratory results, radiology reports, antibiotic use during hospitalization, and length of stay. The data collected will be maintained confidentially using a Research Electronic Data Capture (REDCap) electronic database. These data will be reviewed and analyzed to determine how procalcitonin results are currently used at our institution. The primary outcome of this study is the percentage of procalcitonin labs drawn before or within 24 hours of initiating antibiotics. The secondary outcomes include the number of day(s) antibiotics were continued after procalcitonin results were available and the frequency of antibiotic discontinuation if the procalcitonin level was less than 0.25.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-030

Poster Title: Clinical and pharmacoeconomic outcomes of a pharmacist-led diabetes safety-net clinic

Primary Author: Elliott Asarch, Kern Medical, CA; **Email:** elliott.asarch@gmail.com

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Purpose: To evaluate the clinical and pharmacoeconomic outcomes of a safety-net diabetes mellitus clinic in which patients received care from pharmacists. While previous quality assurance projects have shown positive clinical outcomes from pharmacist managed clinics, less data is available comparing these clinics to “standard care” clinics that do not incorporate a pharmacist in the healthcare team. This study will also compare drug utilization in pharmacist-led clinics compared to clinics that do not utilize clinical pharmacist services.

Methods: The study retrospectively evaluated the charts of patients diagnosed with diabetes mellitus who received care from the pharmacist-led diabetes clinic for a minimum of three months. Patients were included in the study if they had a hemoglobin A1C (HbA1c) level greater than or equal to seven percent. Patients were excluded from the study if they had documented non-compliance or if they did not have HbA1c drawn at baseline and after 3 months of treatment. Primary outcomes evaluated included mean reduction of HbA1c and percent of patients that met National committee for Quality Assurance (NCQA) Healthcare Effectiveness Data and Information Set (HEDIS) HbA1c goals. Secondary outcomes evaluated included cost of diabetes related mediations. Student t test analysis was used to evaluate the HbA1c mean reduction and cost analysis. Chi Square analysis was utilized to evaluate the proportion of patients who met HEDIS goals for HbA1c.

Results: N/A (Research In Progress, Results will be presented on final poster when results finalized)

Conclusion: N/A (Research In Progress, Conclusion will be presented on final poster when results finalized)

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-031

Poster Title: Assessment of enoxaparin thromboprophylaxis dosing and anti-factor Xa levels in low-weight patients

Primary Author: Deepika Mohan, Loma Linda University, CA; **Email:** dmohan@llu.edu

Additional Author (s):
Lisa Hong

Purpose: Using fixed enoxaparin dose for prophylaxis in low-weight patients may be close to weight-based dosing recommended for VTE treatment in these patients. Dosing low-weight patients with prophylactic doses close to total body weight puts them at an increased risk for bleeding and thus, prolong hospitalization. The objective of this study is to evaluate anti-factor Xa levels in low-weight patients receiving enoxaparin for venous thromboembolism prophylaxis.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have had anti-factor Xa level measured following prophylactic enoxaparin dose. The following data will be collected: age, gender, actual body weight, height, body mass index, enoxaparin daily dose, baseline serum creatinine, baseline creatinine clearance, serum creatinine when anti-factor Xa is drawn, creatinine clearance when anti-factor Xa is drawn, anti-factor Xa level, hours between when last dose of enoxaparin was administered and when level was drawn, any adverse events, unit of hospital, reason for admit, duration of therapy and duration of hospital stay. The primary end point of the study is to determine the correlation between body mass index and anti-factor Xa levels in low-weight patients. Secondary end points include determining various factors that are associated with anti-factor Xa levels in low-weight patients and to determine the extent to which body mass index affects anti-factor Xa levels in low-weight patients. Data will be analyzed using Pearson correlation analysis between body mass index and anti-factor Xa level. Linear regression will be used to predict association of anti-factor Xa levels and body mass index.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-032

Poster Title: Implementation of best practice alerts and recommendations for potentially inappropriate medications in older adults

Primary Author: Leilani Isozaki, Loma Linda University, CA; **Email:** lisozaki@llu.edu

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Purpose: Best practice alerts and recommendations serve as useful tools to guide medication therapy. When used appropriately, automated electronic alerts utilize relevant patient-specific information to optimize medication safety and efficacy. However, when used inappropriately, automated electronic alerts can cause alert fatigue. In regards to patient care, reducing the use of potentially inappropriate medications in older adults is essential for preventing adverse drug events and medication errors and is a quality measure for healthcare plans. The objective of this study is to implement best practice alerts and recommendations to optimize medication safety and quality in older adults while minimizing alert desensitization.

Methods: An analysis of potentially inappropriate medications in older adults at a large 908-bed academic university medical center will be performed to determine current utilization. Best practice alerts and recommendations will be instituted via a coordinated effort to optimize medication safety and quality. In order to avoid alert fatigue, a comprehensive review of potentially inappropriate medications will be completed to determine medications of highest priority by cross referencing multiple sources including the American Geriatrics Society Beers Criteria for Potentially Inappropriate Medication Use in Older Adults, the Screening Tool of Older Person's Potentially Inappropriate Prescriptions, and the Screening Tool to Alert doctors to Right Treatment. The list of potentially inappropriate medications in older adults to be associated with best practice alerts and recommendations will be presented to medication safety committees to ensure appropriate application to clinical practice. Medication safety pharmacists will work in conjunction with pharmacists specialized in informatics to coordinate relevant clinical parameters for the alerts and recommendations. To direct appropriate therapy, best practice alerts, order routes for recommended alternative medications, and safety alerts for inappropriate indications and maximum doses exceeded in older adults will be implemented into the electronic health record system. After incorporation of the alerts and

recommendations, an analysis of utilization of potentially inappropriate medications in older adults will be performed to observe the impact of the process implementation.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-033

Poster Title: Does One Size Fit All? Partial Dose Pegfilgrastim Use in Adult Oncology Patients

Primary Author: Ying Long, Loma Linda University Medical Center, CA; **Email:** ylong@llu.edu

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Purpose: 1). To assess the prevalence of neutropenia, febrile neutropenia, and hospitalization due to febrile neutropenia of partial dose pegfilgrastim in patients receiving chemotherapy;
2). To assess the prevalence of subsequent chemotherapy cycle delay or dose reduction due to neutropenia in patients receiving partial dose pegfilgrastim;
3). To assess the financial impact of prescribing partial dose pegfilgrastim on a health system and society;
4). To explore patient characteristics that are potentially associated with prescribing partial dose pegfilgrastim.

Methods: This study has been approved by the Loma Linda University Institutional Review Board. Patients ≥ 18 years old who received pegfilgrastim less than 6 mg between 3/1/2013 and 8/31/2016 will be selected and their medical chart will be reviewed via Epic Electronic Health Record. The following data will be collected: patient age, gender, race, weight, cancer diagnosis, chemotherapy regimen, pegfilgrastim doses, white blood cell and absolute neutrophil count before and after each chemotherapy cycle. Provider documentation will be reviewed to determine if bone pain was reported, loratidine was recommended, or if fever, febrile neutropenia, hospitalization due to febrile neutropenia occurred during chemotherapy. Pegfilgrastim cost and reimbursement will also be collected through the pharmacy department finance database. All data will be recorded without patient identifiers and maintained confidentially. The primary outcomes are to assess the prevalence of neutropenia, febrile neutropenia, or hospitalization due to febrile neutropenia in patients receiving partial dose pegfilgrastim. All analyses will be conducted using SAS version 9.4. A one sample test of proportions will be used to determine if significant differences exist in pegfilgrastim 6 mg compared to less than 6 mg. Exact proportions and confidence limits will be obtained using a corresponding confidence level of 0.95. This study will also assess annual cost of pegfilgrastim

waste on societal and institutional levels, and explore patient characteristics potentially associated with pegfilgrastim dose reduction.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-034

Poster Title: Evaluation of thromboembolic and bleeding outcomes of obese patients with atrial fibrillation treated with direct oral anticoagulants (DOACs)

Primary Author: Dimpa Choksi, Loma Linda University Medical Center, CA; **Email:** c.dimpa@gmail.com

Additional Author (s):
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Purpose: Currently, there are four direct-acting oral anticoagulants (DOACs) approved in the United States. While dabigatran is a direct thrombin inhibitor, rivaroxaban, apixaban, and edoxaban are factor Xa inhibitors. Though DOACs exhibit predominately renal elimination, there is limited evidence regarding safety and efficacy of these agents in the obese population. The American College of Chest Physicians (CHEST) guidelines do not include any recommendations in this unique patient population. The purpose of this study is to add to current literature regarding the safety and efficacy of DOACs in obese patients with atrial fibrillation.

Methods: This study will be submitted to the Institutional Review Board for approval. We will perform a retrospective cohort study of patients seen at a multi-disciplinary outpatient atrial fibrillation clinic at a large academic medical center between September 1, 2015 and September 1, 2016. Subjects will be at least 18 years old with body mass index (BMI) of greater than or equal to 30 kg m-2 and documented use of a DOAC for acute management or secondary prevention of atrial fibrillation induced thromboembolic events for at least 3 months. Electronic medical records will be reviewed for history of thromboembolic complications and bleeding complications. The primary objective is to assess the frequency of thromboembolic events in obese patients. Secondary objective is to assess the frequency of bleeding events, as defined by the Bleeding Academic Research Consortium (BARC) definition for bleeding, a validated bleed risk assessment tool. Additional subgroup analysis according to baseline characteristics will be

performed e.g., subjects who have switched anticoagulant agents, CHADS2-VASc score, HAS-BLED score, renal function, and obesity classification.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-035

Poster Title: Medication reconciliation in an ambulatory cancer center - Impact of the oncology pharmacist

Primary Author: Ariani Waworuntu, Loma Linda University Medical Center, CA; **Email:** awaworuntu@llu.edu

Additional Author (s):
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Purpose: The aim of this study is to determine whether the current medication reconciliation process at the Loma Linda University Ambulatory Cancer Center is optimal enough to avoid any adverse patient outcomes or whether there are still loopholes that could potentially lead to adverse outcomes. Another purpose of this study is to evaluate the impact that the oncology pharmacist performing a medication reconciliation can have in reducing medication errors and preventing adverse drug events, adverse drug-drug, and drug-disease interactions in patients who are about to start a new chemotherapy regimen in an ambulatory cancer center.

Methods: This study has been approved by the Institutional Review Board. This is a prospective study that includes patients who are new to the ambulatory cancer center and starting a new chemotherapy regimen at the outpatient infusion clinic. New patients prescribed with an oral chemotherapy regimen to be taken at home are also included. Patients who are not new to the ambulatory cancer center are excluded. This study will compare the medication reconciliation performed by a clinic nurse at the time of the patient's first visit to the medication reconciliation performed by a pharmacist during the time of their chemotherapy patient education. The oncology pharmacist will document any medication errors (such as omissions, duplications, dosing errors, or drug interactions) and any interventions that were found at the time of the medication reconciliation by the pharmacist. The oncology pharmacist will then present all findings, interventions, and documentations to the medical oncologist for review. The medical oncologist will assess its accuracy and authenticate the claim. The primary outcome that will be measured is the percent of medication reconciliation errors documented

by the oncology pharmacist. The secondary outcome that will be measured is the percentage of interventions made by the oncology pharmacist.

Results: N/A . To be presented.

Conclusion: N/A. To be presented.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-036

Poster Title: Identification of post coronary artery bypass graft surgery patients at high risk for 30-day hospital readmission: the development of a risk stratification tool

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Purpose: The Centers for Medicare and Medicaid Services (CMS) have recently implemented a readmission penalty for hospitals that have unexpected coronary artery bypass graft (CABG) 30-day readmission rates higher than the national average. Currently, there is no guidance for pharmacists on how to stratify patients based off of 30-day readmission risk after a CABG procedure. The purpose of this study is to provide further guidance, specifically for transitions of care pharmacists, by offering a risk stratification tool. This stratification tool will aid in identifying and directing resources to patients at high risk for an unplanned 30-day readmission after a CABG procedure.

Methods: This study will be submitted to the institutional review board for approval. A pharmacy resident will utilize the electronic medical record system to identify patients from October 2015 to January 2017 who underwent a CABG procedure. Patients will be separated according to readmission status with non-readmitted patients serving as the control group. The resident will retrospectively assess factors such as age, gender, race, body mass index, comorbidities, previous heart procedures, perioperative prophylactic antibiotics, bleeding requiring reoperation, gastrointestinal bleeding, renal failure, respiratory failure, discharge destination, length of stay, days to first follow up appointment and best practice measures for cardioprotective medications. The study will assess each risk factor, utilizing the independent t-test or chi-square test between the two groups based on data type. The next step will involve performing bivariate and multivariate logistical regression analyses to identify the risk factors that influenced 30-day readmission. The data will then be assessed to determine significant predictors of readmission which will be incorporated into a risk stratification tool for use by the pharmacists of the transitions of care team.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-037

Poster Title: Vasopressin use in adult code blue outcomes before and after 2015 American heart association (AHA) guideline updates for cardiopulmonary resuscitation and emergency cardiovascular care

Primary Author: Marym Molki, Loma Linda University Medical Center, CA; **Email:** mmolki@llu.edu

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Purpose: Inpatient healthcare institutions have emergency response teams, commonly known as code blue teams, that provide advanced cardiovascular life support (ACLS) to unresponsive patients. AHA guidelines for cardiopulmonary resuscitation and emergency cardiovascular care provide standard of care recommendations for code blue management. One of the major changes in the November 2015 guideline was the removal of vasopressin as an alternative to one dose of epinephrine in the ACLS treatment algorithm. The purpose of this study is to evaluate whether there is value in maintaining vasopressin in hospital code carts to administer as an alternative to one dose of epinephrine.

Methods: This retrospective chart review study looks at approximately 300 subjects between 18-89 years of age at a large academic center in San Bernardino county, California. Patients who received epinephrine or vasopressin during a code blue from January 1, 2015 to August 31, 2016. The primary outcome of this study is the difference in hospital survival to discharge between the two arms of the study. The first arm includes patients who received epinephrine only, and the second arm includes patients who received vasopressin with or without epinephrine. The secondary outcome compares the difference in the rate of hospital survival to discharge before and after publication of 2015 American heart association (AHA) guideline updates for cardiopulmonary resuscitation and emergency cardiovascular care. Another secondary outcome looks at percentage change in the use of vasopressin before and after publication of 2015 guideline recommendations update.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-038

Poster Title: Prevention of paclitaxel hypersensitivity reactions: Oral dexamethasone given night before and morning of paclitaxel versus short-course intravenous dexamethasone infusion given 30 minutes prior to paclitaxel

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Purpose: Administration of paclitaxel is commonly associated with hypersensitivity reactions and as a result, patients receiving paclitaxel must be premedicated with corticosteroids, H1 receptor antagonists, and H2 receptor antagonists prior to infusion. Currently there are no standardized methods for administration of premedications. This study aims to determine the most effective and safest methods of administering premedications, particularly corticosteroids, to cancer patients who are receiving paclitaxel as monotherapy or regimens containing paclitaxel.

Methods: A retrospective chart review of all adult patients treated with paclitaxel, as monotherapy or as part of a combination regimen, for any type and stage of cancer at an ambulatory cancer center between July 2013 and August 2016 will be conducted. Patient demographics, chemotherapy cycle, paclitaxel dose and rate of infusion, premedications, administration schedule of premedications, and occurrence or absence of hypersensitivity reactions will be collected from electronic medical records. The primary outcome of this study is the percentage of patients who experienced hypersensitivity reactions with paclitaxel infusion. The incidence of hypersensitivity reactions will be compared between the different premedication methods. This study was approved by the institutional review board.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-039

Poster Title: Evaluation of clinical outcomes using intravenous immune globulin dosed by ideal body weight

Primary Author: Amanda Golay, Loma Linda University Medical Center, CA; **Email:** agolay@llu.edu

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Purpose: Intravenous immune globulin (IVIG) is a weight based medication that is commonly dosed by actual body weight as recommended by the prescribing information. Due to the high cost of the medication, some institutions have started using ideal body weight to dose instead of actual body weight. However, there have not been studies to show that dosing by ideal body weight maintains the effectiveness of IVIG. The purpose of this study is to determine the clinical outcomes of using IVIG based off of ideal body weight.

Methods: The study will be submitted to the health system's institutional review board. Data collection will be done as a retrospective study of patients who have received IVIG based off of their ideal body weight at an academic teaching hospital from February 13, 2015 to November 18, 2015. Patients will be identified through the use of electronic medical records and each patient will only be included once. The study will be a continuation of a previous study that focused on the impact of selection guideline and ideal body weight dosing on intravenous immune globulin. Clinical outcomes will be determined through documentation in the electronic medical records after a patient has been given IVIG.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-040

Poster Title: Evaluating incidence of bone marrow suppression associated with prophylactic sulfamethoxazole-trimethoprim versus inhaled pentamidine in a pediatric kidney transplant population

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Purpose: Sulfamethoxazole-trimethoprim (SMX-TMP) is the preferred medication for prophylaxis of Pneumocystis Jiroveci Pneumonia (PJP) for pediatric kidney transplant patients at our institution. Inhaled pentamidine is an alternative to SMX-TMP and is given for the first dose of prophylaxis because SMX-TMP can cause bone marrow suppression. The patients' white count and renal function are monitored after transplant to assess appropriateness to switch to SMX-TMP. The purpose of this study is to investigate and compare the frequency of leukopenia with SMX-TMP and inhaled pentamidine in a pediatric kidney transplant population and compare the cost-benefits of each regimen.

Methods: This study will be reviewed by our institutional review board. A retrospective chart review will be performed, including pediatric patients from 1 to 21 years old who have undergone kidney transplantation at our institution from January 1, 2010 to June 30, 2016. Patients will be excluded if they are less than 1 year old or greater than 21 years old, have a sulfa allergy, received a previous transplant, prescribed another medication for PJP prophylaxis, or received prophylaxis for any other indication (e.g. rejection, severely immunocompromised). Electronic medical records will be reviewed for patients for the first 6 months post-transplant. White blood cell count (WBC), absolute neutrophil count (ANC), and serum creatinine lab values will be reviewed. Medication adherence will be assessed by refill history. The primary outcome will be assessing the incidence of leukopenia, defined as WBC less than 5.0, associated with taking sulfamethoxazole-trimethoprim. Secondary outcomes include comparing duration of prophylaxis with sulfamethoxazole-trimethoprim versus inhaled pentamidine, agents used

for transplant induction therapy and duration of therapy, cost analysis, and review of hospitalizations in the first 6 months post-transplant.

Results: n/a

Conclusion: n/a

Submission Category: Pediatrics

Submission Type: Evaluative Study

Session-Board Number: 11-041

Poster Title: Frequency of severe infusion reactions associated with rapid infusion of infliximab without pre-medications

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Purpose: Infliximab is associated with severe infusion related hypersensitivity reactions. Medications are often administered prior to infusion to prevent reactions. Pre-medications have some benefit in reducing infusion reactions once an event has occurred. It is unclear if pre-medicating in the absence of an infusion reaction serves any additional benefit. We aimed to determine (1) the variability in the standard-of-care that may be associated with increased risk of an adverse reaction during an infliximab infusion; and (2) the number of patients receiving rescue epinephrine and/or rapid response / code blue events as the result of a reaction to infliximab.

Methods: We performed a review of ambulatory infliximab infusions between January 2014 and December 2015. Hospital-wide longitudinal data were available from a total of 427 infusions in 2014 and 466 infusions in 2015. This information was cross-referenced with pharmacy records of epinephrine removal from the automated dispensing cabinets, and with data collected by the hospital code committee regarding rapid response and code blue calls.

Results: During the two year review period, two major practice changes occurred. In 2015 the gastroenterology service converted to a 1 hour infliximab infusion, while the rheumatology maintained their infusions at 3 hours. Also in 2015, one provider omitted pre-medications from all infliximab infusions. Over a 1 year time span, these changes resulted in a 51% decrease in total infusion hours (1281 to 630 infusion hours), despite a 9% increase in total number of infusions. There were no epinephrine administrations associated with infliximab maintenance infusions in 2014 or 2015. Additionally, there were no code blue/ rapid response calls associated with infliximab maintenance infusions.

Conclusion: In our experience, the frequency of severe infliximab infusion reactions requiring epinephrine is very low, and corresponds with recently published literature. Infusing infliximab over 1 hour rather than 3 and omitting standard pre-medications did not increase the risk for severe infusion reactions. Our findings highlight a quality-improvement opportunity to standardize infliximab infusions to streamline care in an ambulatory setting.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-042

Poster Title: Implementation of a 48 hours antibiotic time-out in a community hospital

Primary Author: Vivian Nguyen, Palomar Health, CA; **Email:** vivian.nguyen@palomarhealth.org

Additional Author (s):
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Purpose: Antibiotics that are started empirically are often inappropriate for ongoing therapy. Diagnostic information used in reassessing antimicrobial therapy is usually available between 48 and 72 hours. Regulatory requirements endorsed by the CDC, National Quality Forum, and 2017 Joint Commission Antimicrobial Stewardship Standard will require hospitals to institute a program that will provide for a uniform, systematic, and comprehensive assessment of all antibiotics that are continued beyond 48 hours. The objective of this study is to implement an antibiotic time-out to guide providers to reassess the continuation of antimicrobial therapy past 48 hours and to measure the impact.

Methods: This quality improvement project is currently pending approval from the Institutional Review Board and will be implemented in three phases. The first phase will consist of the pharmacy department collaborating with a team of physicians to develop content for the 48 hours antibiotic time-out. After content is developed, approval from the Antibiotic Subcommittee will be obtained for the development of the time-out. In the second phase, the IT department will begin building the electronic time-out note template into the hospital's electronic medical record, Cerner. Once implemented, the pharmacy department will provide education to the medical staff on how to complete a time-out. A time-out alert will fire at the primary care team for patients on antibiotics and expectation would be for the physicians to review all components and take action if needed. In the third phase, data on compliance, antibiotic days of therapy and hospital-acquired infections will be collected prior to and after implementation of the time-out. Initial data analysis may be limited to a select disease state such as sepsis, a specific group on antibiotics such as empiric vancomycin, or a care area such as intensive care unit dependent on the timeline for informatics implementation.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-043

Poster Title: Integration of Rapid diagnostics in a Health-system Antibiotic Stewardship Program

Primary Author: Garrett Rueda, Palomar Health, CA; **Email:** garrett.rueda@palomarhealth.org

Additional Author (s):
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Purpose: Rapid diagnostic technology has expedited microbe identification as compared to conventional culturing methods. The objective of this project is to integrate rapid diagnostics with antimicrobial stewardship in a health-system, improve antibiotic de-escalation therapy, and provide pharmacists and medical staff with evidence based algorithms to aid in targeted therapy, and identify measures to justify the use of rapid diagnostic technologies.

Methods: This study will be submitted to the Institutional Review Committee for waiver as an evidence-based practice implementation. A literature search will be conducted to establish the current role of rapid diagnostics in antimicrobial decision making, specifically in the antibiotic stewardship program. The background information will also include contacting institutions who have already implemented rapid diagnostics into their health system and the change it made with their antimicrobial stewardship program, their pharmacy staff's and physician staff's antimicrobial choices. An algorithm will be developed that describes the use of rapid diagnostics in decision-making. A clinical education package will describe the background, components and value of these new techniques in antimicrobial stewardship. This will be prepared and distributed to the pharmacy and medical staff. After the education has been completed, the project will propose future quality improvement measures to justify rapid diagnostics and antimicrobial stewardship.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-044

Poster Title: Creation of phased PowerPlans for obstetric patients

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Purpose: Given the unpredictability of patients' requirements during child birth, obstetricians try to anticipate all the needs that may arise by using multiple order sets, or PowerPlans found in Cerner, an electronic medical record program. However this leads to duplicate orders, confusion among medical staff providing care to the patient, and a potential for medication error. A solution to this problem is using a phased plan which may reduce duplicate orders, confusion, and allow for timely verification of orders by pharmacists.

Methods: This study is submitted to the Institutional Review Board for approval. In order to create phased PowerPlans, the first of its kind for this facility, current plans (which include medications, patient care orders, and laboratory testing) used by obstetricians will be evaluated and reviewed during the content development step with input from the obstetrics (OB) department. Once the content development step is complete, the plans will be taken to the OB department committee meeting for approval. The approved content will then go to the informatics committee to begin the build for the phased plan. Prior to the plan going live, there will be one to two weeks of testing period while education on the new workflow will roll out to the obstetric doctors, nurses, and all pharmacists. The following data will be collected prior to and after the launch of the phased PowerPlan: occurrence of duplicate orders for pain, nausea and non-steroidal anti-inflammatory drugs along with time to activation of post-partum pain orders.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 11-045

Poster Title: Implementation of dose range checking (DRC) in a community hospital electronic health record (EHR)

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Purpose: It is well recognized that medication errors cause significant morbidity and mortality each year and that many of these errors are preventable. It has been estimated that up to 60% of medication errors involved incorrect doses or administration frequencies. Clinical decision support (CDS) of drug dosing has the potential to significantly improve patient safety. However, in many cases the drug-dose CDS standard content needs optimization to be effective, as its usefulness is often limited by clinically irrelevant alerts. The study objective is to assess the effectiveness of implementing DRC in a community hospital's EHR.

Methods: An algorithm will first be created to help aid in the selection of medications in which implementing DRC would be beneficial. A second algorithm will be developed to use as a step by step decision tree that will guide the user in creating patient specific DRC content for any medication. Fifteen to twenty medications will then be selected from a list of top prescribed medications that are regularly implicated in medication errors. DRC will then be implemented into the EHR for these medications using the algorithm that was created. Data will be collected from the EHR to determine what percentage of DRC alerts result in an override, a discontinued order, or in the order detail being changed. This information will be used to assess the relevance of the alert. Additionally dose information for two medications with protocols will be evaluated pre and post intervention to assess whether the implementation of DRC has resulted in a significant increase in adherence to dosing protocols.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 11-046

Poster Title: Development of an Antimicrobial Stewardship Performance Dashboard

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Purpose: Clinical dashboards are emerging as a valuable tool in assessment of clinician performance and impacting quality by providing relevant and timely information. Literature has suggested that the implementation of well-designed clinical dashboards can favorably impact patient care and outcomes. Antimicrobial stewardship programs play a critical role in promoting the appropriate use of antibiotics, and will likely benefit from dashboards that track performance and outcome data, as well as allow comparison between individual providers. The main objective of this implementation project is to describe the process, requirements and limitations of developing an antimicrobial stewardship performance dashboard for a large healthcare district.

Methods: The requirements to create a clinical dashboard will be researched and multiple processes and products will be evaluated based on organizational goals and needs. Key metrics to assess antimicrobial prescribing and related outcomes will be selected and may include the following: a) treatment of bronchitis in the emergency department (avoidance of antibiotic coverage); b) urinary tract infection (avoidance of antibiotics in asymptomatic bacteriuria); c) Clostridium difficile infection (infection rate during hospitalization); d) sepsis (mortality rate); e) febrile neutropenia (mortality rate); f) surgical prophylaxis (avoidance of antibiotics post-closure).
Once key requirements and metrics are identified, the input from key stakeholders will be solicited, at which point the goals will be reviewed, validated and finalized. This project will be submitted to the Institutional Review Board for approval. Data to be displayed within the dashboard will be extracted from the Electronic Medical Record. The most feasible format to present the results will be determined, with options ranging from a simple table format to pie charts and bar graphs. The design of the dashboard will be implemented by the information technology department with the primary goal of displaying metrics and outcome measures as

both aggregate data and at the individual provider level. Throughout the project, the barriers in developing and implementing a clinical dashboard will be identified and reported.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-047

Poster Title: Retrospective comparison of empiric piperacillin-tazobactam therapy and empiric carbapenem therapy in clinical outcomes for patients with extended-spectrum beta-lactamase bacteremia

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Purpose: The prevalence of extended-spectrum beta-lactamases (ESBLs) in gram-negative bacteria has increased over the past decade. Existing literature indicates that carbapenems are the drug of choice for treating patients infected with ESBL-producing organisms. However, the use of carbapenem contributes to the increasing emergence of carbapenem-resistant Enterobacteriaceae. This type of resistance may be controlled by reducing carbapenem usage and identifying alternative antibiotics that can be used empirically for suspected ESBL infections, including bacteremia. The objective of this study is to compare treatment outcomes between patients initially treated with piperacillin-tazobactam and patients treated with a carbapenem for ESBL bacteremia.

Methods: This retrospective, multicenter study will investigate patients admitted between January 2013 and September 2016 with confirmed ESBL bacteremia. Patients will be identified using consolidated reports of all patients with ESBL bacteremia. Electronic medical records will be reviewed to categorize patients into one of two cohorts: empiric treatment with piperacillin-tazobactam and empiric treatment with a carbapenem (imipenem-cilastatin, meropenem, or ertapenem). The data points to be collected are demographics and clinical parameters including preexisting medical conditions, organism and time of first positive blood culture, source control status, initial empiric therapy (defined as initial antibiotic(s) received for 48 hours or more), initial effective therapy (defined as agent to which isolated organism is reported susceptible in vitro), days of effective therapy, length of stay, and outcome at day 14. The primary outcome

measure will be mortality within 14 days from the first day of detectable bacteremia, where day 1 will be defined as the day of first positive blood culture.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-048

Poster Title: Reducing the number of automated dispensing machine overrides in perioperative areas with the goal of improving patient safety

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Purpose: Regulatory agencies require that all medication orders be reviewed and verified by a pharmacist prior to medication administration. Healthcare providers may perform an automated dispensing machine (ADM) override in emergent situations when the status of the patient's health might be compromised. Currently, the medication override rate in the perioperative area is above the acceptable threshold. Literature has shown that patient safety is affected if medication administration occurs prior to pharmacy review. The purpose of this study is to identify workflow weaknesses, inadequacies, and gaps. The goal is to reduce override rate through intervention and education.

Methods: This is a prospective study with the goal of improving patient care during the perioperative process. Baseline and prospective data will be collected through automatic cabinet dispensing records and electronic health records. The information collected will include number of overrides, timing of medication ordering processes, and the efficiency of patient transfers. The pharmacy resident will review preliminary information to identify specific deficiency before baseline data will be collected. The pharmacy resident will provide continuous real time education to staff, streamline methods of workflow, and provide information to adjust ADM settings. The primary objective of this study is to reduce the number of ADM overrides in the hospital's perioperative areas. The secondary objective is to improve workflow efficiency and promote better coordination of care between the perioperative department and pharmacy.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-049

Poster Title: Improving nursing compliance with intravenous smart pump drug library usage at a community hospital

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Purpose: Many hospitalized patients are prescribed a number of intravenous (IV) medications including high risk medications. IV smart pump drug libraries have shown to increase patient safety by generating alerts to reduce the likelihood of adverse drug events associated with IV infusion errors. A review of the IV smart pump system at our facility revealed an underutilization of the drug library and subsequently an area for improvement. The primary objective of this study is to improve drug library compliance through a collaborative interdisciplinary approach consisting of drug library revisions, nursing staff education, and auditing.

Methods: This is a prospective quality improvement study. Baseline data will be collected retrospectively from the IV smart pump utilization reports and prospectively through real time auditing to identify areas for improvement in critical care units and the cardiovascular unit. The data collected will include number of infusions using the smart pump drug library, infusions using simple delivery, alerts, and override variance medications. Baseline data will also consist of specific medications that were infused without utilizing the drug library during an allocated period of auditing. Based on this data and nursing staff feedback, revisions will be made to the smart pump drug library. Revisions will include the addition of new medications, and the rearrangement of the medication display list. Drug library limits and infusion units for specific medications will also be revised to match the systemwide titration protocol. In addition, targeted nursing staff education will take place to reinforce the importance of utilizing the drug library with the corresponding limits followed by daily auditing.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-050

Poster Title: Impact of a Guideline-Based Treatment Algorithm and Pharmacy-Driven Education on Clostridium difficile Infections in an Academic Medical Center

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Purpose: Adherence to Clostridium difficile infection (CDI) treatment guidelines has shown significant improvement in CDI recurrence and mortality, and has been associated with shorter length of stay in previous studies. Unfortunately, adherence is inconsistent and standardized treatment is fairly uncommon. The purpose of this study is to assess adherence to guideline-based treatment for CDI before and after implementation of a standardized, American College of Gastroenterology (ACG) guideline-based treatment algorithm and pharmacy-driven provider education. Additionally, the study will assess the impact of a standardized treatment algorithm on outcomes in patients treated for CDI.

Methods: This prospective, observational study will assess guideline adherence and patient outcomes (clinical cure, length or stay, recurrence, and mortality) in two groups – patients treated for CDI between January and June 2016, prior to implementation of a standardized, guideline-based treatment algorithm and pharmacy-driven education versus patients treated for CDI between January and June 2017, after implementation of the algorithm and pharmacy-driven education. CDI-related drug cost before and after implementation will also be assessed. Patients treated for CDI will be identified through review of electronic and paper medical records and the following data will be collected: demographic information, hospital admission and discharge dates, pertinent vitals and microbiology data, CDI status and 60-day recurrence, prescribed and administered medications, CDI-related surgical intervention, and 60-day all-cause mortality.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-051

Poster Title: Critical Care Pharmacist and Pharmacy Resident Integration into Healthcare Team and Optimization of Drug Therapy in Critically Ill Patients

Primary Author: Tiffany Truong, Santa Clara Valley Health and Hospital System, CA; **Email:** tiffany.truong@hhs.sccgov.org

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Purpose: To integrate the critical care pharmacist and pharmacy resident into the critical care health care team and to demonstrate their presence optimizes medication therapy management through chart review and rounding with the critical care team.

Methods: This study will be submitted to the Institutional Review Board for approval. Currently at my institution, there is one pharmacist monitoring four intensive care units (trauma, surgical, medical, and coronary). Due to time constraints, this pharmacist is only able to round with the medical intensivists. By adding a second decentralized pharmacist or resident to monitor the trauma and surgical units, the workload will be more evenly split. This allows more time for the pharmacist to better optimize medication management through chart review and expanded multi-disciplinary team rounding with surgeons and intensivists. Patient interventions and clinical monitoring will be documented in the electronic medical record (Health Link) using i-vents, which is a documentation tool used only by pharmacists to document drug related interventions and monitoring. The primary outcome of this study is to measure the number of clinical interventions that were accepted and rejected for antibiotic de-escalation, dose optimization or adjustment, drug-drug interaction, and therapy recommendations before and after de-centralization of the pharmacist or resident. After the two month study period, the pharmacy resident will retrospectively review all intensive care unit patients' medical records to collect all pharmacist interventions (i-vents). By decentralizing another pharmacist or resident, we hope to increase the number of interventions to optimize medication management and improve relationships with nurses and providers in the trauma and surgical units.

Results: n/a

Conclusion: n/a

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-052

Poster Title: Identification of contributing factors leading to 30-day hospital readmissions for patients with heart failure

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Purpose: Despite quality improvement campaigns, identifying risk factors and preventing heart failure (HF) hospital readmissions remains a challenge. Santa Clara Valley Medical Center (SCVMC), a county hospital with a diverse patient population commonly underrepresented in the medical literature, has noted an increasing trend in 30-day readmissions. The objective of this project is to identify the top five reasons for 30-day all-cause readmissions in HF patients at SCVMC. Additionally, an effort to increase the use of SCVMC pharmacies is necessary to better manage and monitor patients with HF. This study also aims to identify the top reasons why patients utilize non-SCVMC pharmacies.

Methods: This study has been approved by the Institutional Review Board (IRB) at SCVMC. A retrospective chart review will be performed on patients admitted with a primary diagnosis of HF between July 1, 2015 and June 30, 2016. Baseline demographics, social history, hospitalization histories, HF clinical data, comorbidities, medication history, HF clinic enrollment, discharge plans, and pharmacy utilization will be collected. Descriptive statistics will be used for analysis of the data collected. A comprehensive corrective plan will be implemented by January 2017 to address the top reasons for readmissions and external pharmacy usage. A follow-up study pending IRB approval will examine the impact on 30-day all-cause readmission rates and SCVMC pharmacy utilization.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 11-053

Poster Title: Reducing opioid overdose through implementation of a county-wide naloxone take-home program and creation of an opioid prescribing protocol.

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Additional Author (s):
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Purpose: In 2014, a total of 28,647 American lives were taken by opioid overdoses, equivalent to one life every 18 minutes. Unless something is done, both the prevalence and incidence of opioid-related deaths will continue to ravage our communities. The aim of this project is to reduce opioid overdose deaths, first by increasing patient access to naloxone, the antidote to opioid overdoses. Second, we will analyze baseline opioid-prescribing habits of county physicians and address them in a clear, comprehensive and evidence-based opioid-prescribing protocol outlining proper initiation, management and tapering down of opioids.

Methods: Once approval is obtained from the hospital's Institutional Review Board, we will start by implementing naloxone-dispensing protocols in 11 county pharmacies in accordance with regulations set by the California Board of Pharmacy and the Medical Board of California. In addition to targeting pharmacies, we will expand take-home naloxone programs to local community organizations that interact with high-risk patients; these include shelters, drug treatment programs, and clinics. Non-pharmacy dispensing sites will be authorized to distribute naloxone kits through standing orders issued by the sites' respective medical directors.
Next, we plan to promote prescriber education through the assembly of a clear, evidence-based opioid prescribing protocol outlining proper procedures for the initiation, management, and tapering down of opioids in both acute and chronic settings. To identify any high-risk behaviors in need of attention, we will obtain a baseline measure of current opioid prescribing habits by county physicians. To do so, we will first generate a list of patients taking an opioid dose greater than or equal to 90 Morphine Milligram Equivalents per day. (We will target the following

opioids: morphine, hydromorphone, oxycodone, fentanyl, oxymorphone, and hydrocodone.) Afterwards, we will undergo retrospective chart review to assess the appropriateness of those opioid therapies using recommendations from the latest 2016 CDC Guidelines on Chronic Pain Management. All physicians' names will be blinded during analysis of the results.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-054

Poster Title: Determining the distribution and identifying potential interventions of antibiotic prescriptions in outpatient clinics

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Purpose: Overuse of antibiotics is a major public health concern that is associated with increased morbidity and mortality from the development of bacterial resistance, secondary infections, and serious adverse drug events. Healthcare and community settings are encouraged to develop an antibiotic stewardship program in order to preserve the efficacy of existing antibiotics. The primary purposes of this study are to characterize and describe the distribution of antimicrobial prescribing practices in the outpatient setting at my institution, and to identify potential interventions to improve antibiotic utilization and reduce the occurrence of antibiotic resistance.

Methods: This study will be submitted to the Institutional Review Board for approval. Antibiotic prescriptions information from patients 18 years or older will be collected and a set number will be randomly selected from January 2016 to March 2016 from each class of the most commonly prescribed antibiotics in the outpatient clinics, excluding specialty clinics. Antibiotics will be assessed for clinical appropriateness defined by the Infectious Diseases Society of America (IDSA) guidelines for indication, dosing, frequency, duration, drug-drug, and drug-disease state interactions. Indications that are not addressed by IDSA will require consultation with an Infectious Disease specialist, John Hopkins Antibiotic Guide, or the Sanford Guide. Patient's specific data will include age, gender, ethnicity, height, weight, allergies, reaction to allergies, most recent serum creatinine, and culture results. Results will be used to educate physicians and pharmacists in the form of in-services, and if necessary, dosing cards, or HealthLink alerts. Primary outcomes of the study include describing the distribution of antibiotics prescribed in

the ambulatory setting, and identifying potential interventions to improve antimicrobial usage through a retrospective evaluation of clinical appropriateness. Secondary outcomes include adverse drug reactions 30-days post-script that require hospitalization, association of patient's characteristics to frequency of antibiotic prescribing, and number of patients greater than 65 year-old who do not have a baseline serum creatinine in the last 12 months for renally adjusted antibiotics.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-055

Poster Title: Evaluation of medication histories collected by pharmacy technicians and pharmacy students in the emergency department

Primary Author: Christie Kim, Santa Clara Valley Health and Hospital System, CA; **Email:** christie.kim@hhs.sccgov.org

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Purpose: Traditionally, patient medication histories are collected and documented in the medical record by nurses. Dedicating this responsibility to pharmacy technicians and pharmacy students can provide nurses with more time to focus on other patient care activities. The primary objective of this study is to compare the accuracy of medication histories collected by pharmacy technicians/students to medication histories collected by nurses in the emergency department. If the results are similar between the two groups, we plan to transition the medication history responsibility from nurses to pharmacy technicians/students in the future.

Methods: During a 4-week pilot test in the emergency department, a pharmacy resident will observe the technician/student during the medication history process to identify if transcription errors were made during the patient interview, call to the outpatient pharmacy, and documentation of the medications into the electronic medical record. After the pilot test, we will conduct a retrospective study to evaluate the medication histories. The following data will be obtained from each medication history: patient age, gender, preferred language, admission unit, type of outpatient pharmacy (e.g. internal or external), number of documented prescriptions, OTC and high-alert medications, number and type of discrepancies (e.g. incorrect or missing medication, strength, dose, route, frequency, indication, last dose taken, allergy information, days supply, and last date dispensed), and number of accurate medications. After the data is collected from each medication history, the accuracy rate will be determined for the technicians, students, and nurses by identifying the number of accurate medication histories out of the total number of medication histories collected.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 11-056

Poster Title: Evaluation of a medication synchronization program: Impact on adherence and patient satisfaction

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Additional Author (s):
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Purpose: Medication synchronization, where all medications are refilled on the same day each month, has been shown to improve medication adherence, especially in patients with low baseline adherence. The objective of this study is to evaluate and describe the impact of a medication synchronization program implemented at one of ten outpatient pharmacies at a 574-bed county hospital, with the intent of offering this service to all patients utilizing the hospital's pharmacies.

Methods: This study will be submitted to the Institutional Review Board for approval. Retrospective and prospective chart review of patients eligible and enrolled in the medication synchronization program will be conducted to collect the following data: age, gender, race/ethnicity, language, zip code, insurance status/type, social history, chronic disease state(s), medication dispense dates, number and drug class of medications synchronized, and method of medication delivery. Eligible patients are defined as any patient who filled two or more chronic medications at the county hospital's pharmacy three months prior to medication synchronization program implementation, any patient referred by providers of the institution, or any patient expressing interest in enrollment. All data collected will be maintained confidentially and only patients who agree to enrollment in the medication synchronization program will be included. Proportion of days covered (PDC), as defined as the proportion of days supplied by at least one drug in the class based on prescription fills during a measurement period, will be calculated to measure medication adherence before and after enrollment in the synchronization program. Collected data will be analyzed using the paired Student's t-test to

compare PDC before and after enrollment. A survey will be sent out to patients at the end of the study period to evaluate patient satisfaction regarding enrollment in the program.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-057

Poster Title: Comparing outcomes following pharmacy-driven interventions to improve patient compliance with laboratory monitoring for chronic medications: A randomized trial

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Purpose: Improving patient compliance to routine laboratory monitoring for chronic medications is an effort to reduce preventable adverse drug events and promote safe outpatient prescription medication use. Community pharmacists are often the most accessible healthcare providers to patients. Therefore, they are in an optimal position for promoting patient compliance with laboratory monitoring in outpatient settings. This study aims to evaluate and compare the effectiveness of four pharmacy-driven interventions in improving overall patient compliance with routine laboratory monitoring for chronic medications in ambulatory settings at Santa Clara Valley Health and Hospital System.

Methods: This study has been approved by the Institutional Review Board. A retrospective review will be conducted to assess the baseline of overall compliance rate of routine laboratory tests for target chronic medications and identify eligible non-compliant patients. The target chronic medications include angiotensin converting enzyme inhibitors, angiotensin receptor blockers, diuretics, and digoxin. The following data will be collected: age, gender, ethnicity, preferred language, primary care physician location, primary pharmacy location, number of primary care visits within past year, number of emergency department visits within past year, the class and indication of the chronic medication, total treatment days within the past year, comorbidities, and the status of laboratory test. Patients will be randomized into four arms in a 1:1:1:1 ratio to receive letter reminders, automated phone call reminders, phone call consultations by pharmacists, or in-person consultations by pharmacists. The compliance rate of digoxin patients is anticipated to be significantly different from the other target mediations. To minimize possible confounders, the four arms will be matched to have the same number of

digoxin patients. The institution Language Services will be utilized for patients whose preferred languages are not English. Patients will be de-identified and coded. Data will be password protected, and only shared among the researchers of this study. The percentage of patients who completed recommended laboratory tests after receiving each intervention will be measured and compared.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-058

Poster Title: Safety and feasibility of rapid infusion rituximab over 90-minutes: a single infusion center, prospective study

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Purpose: Rituximab is FDA approved for 90-minute infusions for two of its indications: follicular and diffuse large B cell Non-Hodgkin's lymphomas. The objective of this study is to determine the safety and feasibility of 90-minute rituximab infusions regardless of indication.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have received at least one rituximab infusion at the standard infusion rate. If these patients meet the inclusion and exclusion criteria for the study, then informed consent will be obtained. The patients will be interviewed by a physician or pharmacist prior to their next rituximab infusion. If informed consent is obtained, the patient will receive their next rituximab infusion in 90-minutes, 20% of the dose will be infused over 30 minutes and the remaining 80% of the dose will be infused in 60 minutes. Vital signs will be recorded every 15 minutes by the registered nurse for the first hour, then every 30 minutes. The nurse will fill out a de-identified data collection form to determine if an infusion related reaction occurred. If patients have signs or symptoms of an infusion reaction, the infusion will be stopped until symptoms are resolved and the infusion will be resumed at 50% of the previous rate and titrated every 30 minutes as tolerated. If needed, rescue medications will be administered to treat the reaction. The primary endpoint of the study is the development of grade 3 or 4 infusion related reactions. Secondary endpoints include the development of grade 1 or 2 infusion related reactions.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-059

Poster Title: Improvement in Medication Adherence for the Emerging Adult Population Using Text Messaging Services

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Purpose: There have been many studies regarding the use of text messaging on medication adherence and studies involving medication adherence in adolescents and young adults. However, there have been very few studies that examine the emerging adult population (between 18-21 years of age) and the impact of text messaging on their medication adherence. This project aims to address a core problem and prevent future complications related to medication non-adherence.

Methods: The study will be submitted to the Santa Clara Valley Medical Center's Institutional Review Board for approval. Prior to the study, the Bascom pharmacy staff will be trained with proper procedures and handing of the county provided cell phone. Along with training on the operation of the device, they will also be trained on how to send, respond, and interact via two-way text messaging with patients.
Patients will be identified based on their Bascom clinic physician who have agreed to participate in the study. All patients will then be contacted via telephone, mail, or verbally to opt into this study. Patients will then be contacted at least once monthly reminding them of refills or medications that require them to pick up. The data that will be collected for this study includes: missed/ late prescription pick-ups before and after intervention (medication adherence), patient days covered (PDC), patient satisfaction, prescriber satisfaction, and patient perceptions on their own medication adherence (self-reported).
The study plans to not include personal identifiers in our text messages or the name of the medication. If the patient would like to know more information about their medications that

are ready for them they will have the option to respond to our message. Once they respond to our message, an algorithm will be followed to ensure the correct patient and confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-060

Poster Title: Preemptive oral versus intravenous acetaminophen for postoperative pain in minimally invasive gynecologic surgery: a randomized, double-blinded, controlled trial

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Tresa Lombardi

Purpose: This study aims to determine if oral acetaminophen provides adequate post-operative pain relief compared to its intravenous form when given preemptively in minimally invasive gynecologic surgery. Currently, there is no gold standard for preemptive analgesia and, as such, medication route is determined by surgeon preference. Intravenous acetaminophen is significantly more costly than its oral equivalent at a rate of approximately $40/dose versus $0.05/dose, respectively. If appropriate, administering oral instead of intravenous acetaminophen would reduce healthcare costs substantially.

Methods: Women 18 years of age and older undergoing robotic-assisted laparoscopic hysterectomy for benign indications are eligible for enrollment. Exclusion criteria include, but are not limited to, allergy to acetaminophen, inability to take medications by mouth, and intraoperative conversion to laparotomy. Consented patients will be randomized to either the control or intervention group. The control group will receive two placebo capsules 30 minutes prior to surgery and then acetaminophen 1000 milligrams intravenous after anesthesia induction but before first skin incision. The intervention group will receive acetaminophen 1000 milligrams (two 500 milligram capsules) by mouth 30 minutes prior to surgery and then 100 milliliters of saline intravenous after anesthesia induction but before first skin incision. Postoperative pain will be assessed at two hours, four hours, and 24 hours postoperatively using the visual analogue scale (VAS). The mean difference between each group's VAS score will be compared to assess the non-inferiority of oral acetaminophen to the intravenous form. Other outcomes to be assessed include postoperative opioid use, length of time in the post-anesthesia care unit, and length of stay.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-061

Poster Title: Rapid identification of gram-negative bacteremia and impact on anti-pseudomonal antibiotic consumption and patient outcomes at a community-based hospital system

Primary Author: Samantha Wong, Scripps Memorial Hospital La Jolla, CA; **Email:** wong.samantha@scrippshealth.org

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Purpose: The purpose of this study is to determine the impact of Verigene® Gram negative molecular assay implementation in combination with antibiotic stewardship on anti-pseudomonal antibiotic consumption in patients with gram-negative bacteremia. Secondary endpoints will assess differences in hospital length of stay, mortality, pharmacy costs, and overall hospital charges pre- and post- implementation of the Verigene® Gram-Negative Blood Culture test (BC-GN).

Methods: This multicenter, quasi-experimental study will analyze patients with Escherichia coli, Klebsiella pneumoniae, Klebsiella oxytoca, and Proteus spp. bacteremia, pre- and post-implementation of the Verigene® Gram-Negative Blood Culture Test (BC-GN). The pre-intervention cohort will include patients from November 1, 2015 through October 30, 2016 and will be compared to the post-intervention cohort from November 1, 2016 through March 30, 2017. Eligible patients include hospitalized patients age 18 years or older with gram-negative bacteremia upon admission, defined as a positive blood culture with a gram-negative pathogen within 72 hours of admission. Exclusion criteria includes patients with polymicrobial bloodstream infections, antibiotic care withdrawn due to hospice or palliative care goals, blood culture organisms identified prior to admission, or positive blood culture > 72 hours after admission. The primary outcome will be days of therapy (DOT) of anti-pseudomonal antibiotics versus DOT of non-anti-pseudomonal antibiotics. Secondary outcomes will include hospital length of stay, mortality, pharmacy costs, and overall hospitalization costs. Data collected will include DOT of antibiotics, blood cultures and susceptibilities, length of hospital stay, mortality, pharmacy and overall hospitalization costs.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-062

Poster Title: Beyond the LACE index: Identifying factors associated with 30-day readmissions in a hospital system

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Purpose: The LACE index (length of stay, acuity, Charlson comorbidity index, number of ED visits in the preceding six months) is a validated tool used to predict the risk of unplanned readmission in medical and surgical patients within 30-days of hospital discharge. Currently, MTM (Medication Therapy Management) services are provided towards high LACE index patients prior to discharge at Scripps Memorial Hospital, La Jolla. It is hypothesized that factors outside the LACE index can contribute to readmission. The purpose of this study is to identify other factors associated with 30-day readmissions to further screen patients that may benefit from MTM service.

Methods: A retrospective chart review will be conducted to identify patients between January 2016 and June 2016 at high risk (11-19 points) for readmission according to the LACE index. Patient demographics and clinical characteristics will be obtained through the Scripps Health Information's electronic medical records. The following data will be collected: patient age, gender, ethnicity, medications upon admission, where the patient was admitted from, clinical co-morbidities, laboratory values, insurance information, discharge location, hospital service, cause of admission and whether MTM service was provided. Variables will be assessed for relative risk for 30-day readmission in both patients who did and did not receive MTM service. The outcome of interest will be readmission to any of the Scripps hospitals within 30 days of discharge. All data will be recorded without patient identifiers and patient confidentiality maintained. This study will be submitted to the Scripps Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-063

Poster Title: Use of daptomycin plus ceftaroline versus standard of care for treatment of methicillin resistant Staphylococcus aureus bacteremia

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Purpose: Methicillin resistant staphylococcus aureus (MRSA) bacteremia is a frequent and difficult problem in the hospital setting. The high mortality and clinical treatment failures with current standard of care, vancomycin or daptomycin, leave room for clinical and microbiological improvement. Several studies have demonstrated synergistic activity between daptomycin and ceftaroline for treatment of MRSA, and this combination has been a successful salvage treatment for refractory bacteremia. The purpose of this study is to compare combination treatment with daptomycin and ceftaroline versus standard of care therapy daptomycin or vancomycin monotherapy with respect to microbiological cure and clinical outcomes in patients with MRSA bacteremia.

Methods: This study was submitted to the Sharp Healthcare Institutional Review Board for approval. The study is a retrospective chart review of a cohort of patients from Sharp Memorial and Grossmont Hospital. The data collection time period will be from January 1, 2014 to December 31, 2016. Eligible patients will have a diagnosis of MRSA bacteremia treated for at least 72 hours with a combination of daptomycin plus ceftaroline and will be compared to a cohort of patients at the same facilities within the same time frame who were treated with standard of care therapy (vancomycin or daptomycin monotherapy). Combination will be matched to standard therapy in a 1:2 ratio based on the following criteria: 1. Source (1.Primary 2.Secondary 3.Venous Catheter related), 2.Age (+/- 10 years), 3.Creatinine Clearance (>50ml/min, < 50ml/min or End Stage Renal Disease on Hemodialysis).The following data will be collected: Age, gender, height, weight, serum creatinine, comorbidities, Pitt Bacteremia Score, source of infection, level of care, time of first positive and first negative blood culture, antibiotic

regimen, length of hospital stay, in hospital mortality and the number of diagnostic treatments. Time to microbiological cure will be calculated from the time of the first positive to the first negative blood culture. The primary outcome, time to microbiological cure, will be analyzed using time to event analysis. Data will be presented in Kaplan-Meier Curve format.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-064

Poster Title: Evaluation of clinical effectiveness and safety of extended-interval and conventional dosing of gentamicin in postpartum adults

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Purpose: Although extended-interval dosing of gentamicin has been studied and shown to have equal effectiveness without higher toxicity, there are still populations, such as postpartum adults, that have not been extensively studied. The rare literature that exists for extended-interval dosing in postpartum adults suggests there may be positive outcomes in terms of clinical effectiveness and safety. However, these studies are sparse, dated, and rely on small samples. As such, the purpose of this study is to evaluate the clinical effectiveness of extended-interval dosed gentamicin and conventionally dosed gentamicin in postpartum adults.

Methods: This is a single-site, retrospective, observational control study that will study postpartum adults who received gentamicin for either chorioamnionitis or endometritis. Inclusion criteria include age over 18 years old, diagnosis of chorioamnionitis or endometritis, and use of gentamicin. Exclusion criteria include age less than 18 years old, pregnancy, lack of diagnosis for chorioamnionitis or endometritis and aminoglycoside allergy. The study's primary outcome is clinical effectiveness as suggested by rates of treatment success, which is defined as fever resolution within 48 hours, between the conventional and extended-interval dosing groups. Safety outcomes such as hearing and renal function will also be assessed. Secondary outcomes include time to fever resolution, length of stay, duration of antibiotic use, time to antibiotic administration and cost of drug usage.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-065

Poster Title: Point prevalence study of medication errors using a validated trigger tool versus comprehensive chart review in the medical intensive care unit of a community hospital

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Purpose: Many hospitals are dependent upon voluntarily reported medication errors, but the prevalence of actual or potential errors is unknown. Pharmacist-led chart reviews may lead to recognition of errors and allow for interventions, however, this method is labor-intensive and unsustainable. The Institute for Healthcare Improvement (IHI) Global Trigger Tool is validated and may capture potential errors, but is not entirely relevant to the needs of our institution. The objective of the study is to identify medication errors in the medical intensive care unit and to create a customized trigger tool using findings from chart reviews and the IHI Global Trigger Tool.

Methods: This study will be submitted to the Institutional Review Board (IRB) for approval. The study will be conducted in a 48-bed medical intensive care unit (MICU) of a community hospital and patients will be selected based on the severity of the Acute Physiology and Chronic Health Evaluation (APACHE) score. A total of 20 hours over 5 days will each be dedicated to the electronic medical record to identify potential and actual errors using 1) the IHI's "Medication Module Triggers" and "Intensive Care Module Triggers," then 2) pharmacist-led comprehensive chart review. Records will only be reviewed within the allotted time frame to assess the feasibility of chart review within the pharmacist's workflow. The number of interventions initiated and accepted will be documented. All errors from both methods will be reviewed and categorized using the National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) classification. The creation of a customized trigger tool is planned upon analyzing data on frequency and severity of actual and potential errors identified.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-066

Poster Title: Characterization of Exparel Impact Upon Orthopedic Surgery Outcomes

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Purpose: Liposomal Bupivacaine (Exparel) is approved for surgical site administration to produce postsurgical analgesia. This FDA indication is based on 2 clinical trials: hemorrhoidectomy and bunionectomy. There is no conclusive study that proves its efficacy superior to standard therapy. Acute post-operative pain is a common phenomenon in orthopedic procedures. Due to the high cost of Exparel, we question the efficacy of its use in total knee arthroplasty (TKA). The purpose of this study is to assess the clinical efficacy and safety of liposomal bupivacaine versus standard of practice in patients who have undergone unilateral total knee arthroplasty.

Methods: Multi-site, retrospective, historical control, utilizing the Orthopedic Surgery Service Line's newly developed database to compare specific outcomes before and after adoption of Exparel in practice. We will collect data of patients who underwent TKA at three different sharp hospitals: Sharp Grossmont, Sharp Memorial, and Sharp Coronado. Data that will be collected include: opioid and naloxone use, which are surrogates of efficacy and safety, respectively. We will include patients ≥18 years old, who has underwent unilateral TKA. We will exclude patients who are opioid tolerant, have opioid/narcotic allergies. Data will be collected using three different data sources: Sharp Healthcare Orthopedic Registry, Sharp Healthcare Billing Records, and Cerner Electronic Health Record. We will include in our data: age, gender, weight of the patients, as well as date/time of admission/ discharge. We will collect data pre and post June 2015, since that is when the orthopedic surgeons were trained on Exparel injection techniques. The amount of patients included will be based on our power analysis.

Results: n/a

Conclusion: n/a

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-067

Poster Title: Evaluation of the time to therapeutic vancomycin troughs in patients who receive loading doses

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Purpose: At several medical institutions, vancomycin loading doses are often given in an effort to reach a therapeutic vancomycin trough level faster than with traditional maintenance dosing. However, it is currently unknown whether this practice leads to a decreased time to a therapeutic trough level. Our study aims to determine if giving a vancomycin loading dose helps achieve a therapeutic trough level faster than if no loading dose is given.

Methods: This retrospective, observational study has been approved by the Institutional Review Board. The electronic medical record system will identify patients who have received at least two doses of vancomycin and have had a trough level drawn. Exclusion criteria include patients whose vancomycin troughs were drawn incorrectly, patients on hemodialysis, and peri-operative patients. The following data will be collected: patient age, weight, body mass index, vancomycin dosing regimen, vancomycin trough level(s), serum creatinine measurements throughout hospitalization, and vancomycin indication. The patients' charts will be reviewed to see whether a vancomycin loading dose was given in order to determine if giving a loading dose increased the percentage of patients who attained an initial therapeutic vancomycin trough level. The reviewers will also determine if giving a vancomycin loading dose is associated with nephrotoxicity, defined as a serum creatinine increase of greater than or equal to 0.5 milligrams per deciliter or an increase of greater than 50 percent from baseline over two consecutive readings from the initiation of vancomycin to 72 hours after the last vancomycin dose was given. Other outcomes looked at will include the percentage of patients with either a supra-therapeutic or sub-therapeutic initial vancomycin trough level, duration of vancomycin therapy,

and the average time to attain a therapeutic vancomycin trough level. All data will be collected without patient identifiers to maintain patient confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-068

Poster Title: Impact of transition of care pharmacist interventions in patients with myocardial infarction

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Purpose: Since October 2012, Centers for Medicare and Medicaid Services began reducing inpatient reimbursement for hospitals with excess readmissions in an effort to encourage improvements in hospital outcomes. Between July 2011 and June 2014, readmission rates for acute myocardial infarction decreased from 17.8 percent to 16.0 percent. To sustain this trend, hospitals are implementing strategies such as transition of care pharmacy programs to decrease readmissions. The objective of this study is to assess the impact of transition of care pharmacy interventions on 30-day readmission rates and medication errors in acute myocardial infarction patients and to track pharmacy interventions.

Methods: This study will be a prospective chart review that will compare 30-day readmission rates and number of medication errors in patients with acute myocardial infarction who received transition of care pharmacy services versus standard of care. Researchers will identify patients admitted to Stanford Health Care's general cardiology team with a diagnosis of ST elevation myocardial infarction, non-ST elevation myocardial infarction, or unstable angina. The following data will be collected: patient age, gender, admission date, discharge date, admission diagnosis, 30-day readmission status, medication errors, transition of care pharmacy interventions, core measures, and medication compliance.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-069

Poster Title: Hepatotoxicity Associated with Pegaspargase in Adults with Acute Lymphoblastic Leukemia

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Purpose: Pegaspargase (PEG) is a mainstay component in acute lymphoblastic leukemia (ALL) therapy and is associated with improved survival rates. One of the most commonly observed adverse events is hepatotoxicity. Previous literature has described PEG-induced hepatotoxicity as an increase in aminotransferase levels and bilirubin. Literature further characterizing this hepatotoxicity is needed to improve understanding of the toxicity. Such information could allow for risk stratification of patients and more appropriate monitoring. The objective of this study is to identify risk factors, define the frequency, severity, median onset, reversibility, and time to normalization of pegaspargase-induced hepatotoxicity.

Methods: This study is a retrospective, single-center, chart review of adult patients diagnosed with acute lymphoblastic leukemia age 18 years of age and older who received at least one dose of PEG from July 1, 2008 to July 30, 2016 at Stanford Health Care. These patients will be evaluated to identify possible risk factors associated with hepatotoxicity. Hepatotoxicity was defined using the Common Terminology Criteria for Adverse Events (CTCAE) version 4.03 for evaluating transaminitis and bilirubinemia. Data collection will include age, sex, height, weight, ALL regimen used, dose used, number of PEG doses given, concomitant hepatotoxic medications, albumin level, time to develop grade >1 hepatotoxicity, time to normalize to grade < 1, lipase, amylase, and triglycerides.

Results: In progress

Conclusion: In progress

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-070

Poster Title: Pharmacist Impact on Epoetin Usage in CKD Patients in an Acute Care Setting

Primary Author: Austin Wang, Stanford Health Care, CA; **Email:** austinw4002@gmail.com

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Purpose: Outpatient pharmacist-led epoetin management has demonstrated clinical and economic benefit but these interventions were not studied in acute hospital settings. A medication use evaluation (MUE) at our facility identified a subgroup of chronic kidney disease (CKD) patients on epoetin for greater than 30 days that could benefit from pharmacist intervention to optimize epoetin. Specific opportunities include reduction in overall red blood cell transfusion (RBC), cost savings due to epoetin dose rounding to appropriate vial size, optimization of epoetin therapy with package insert based dose adjustments, and appropriate utilization of iron supplementation.

Methods: This longitudinal study will begin with the retrospective chart review of patients with hospital length of stay greater than 30 days on epoetin to establish a starting reference level of dosing frequency, RBC usage, baseline characteristics, and clinical response. This information will further identify specific steps that can be taken to optimize epoetin therapy and a dosing algorithm will be developed in collaboration with the nephrology department. This prospective pharmacy-managed epoetin algorithm will be proposed at a pharmacy and therapeutics committee meeting to gain approval prior to initiation and will run over 6 months. The prospective arm of this study will include pharmacist intervention based on collaborative guidelines to optimize patient care. Patients on epoetin for greater than 30 days will be evaluated based on these guidelines and the pharmacist will provide recommendations to optimize clinical outcomes and minimize cost. For this group of patients on epoetin therapy, the primary outcome will be defined as the number of RBC ordered and appropriate dosing interventions recommended by pharmacists per collaborative guideline. The secondary outcomes will be defined as the number of iron panels ordered in hospital admission, appropriateness of iron therapy, adverse events, and pharmacy expenditures on epoetin.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-071

Poster Title: Rates of BK virus in highly sensitized kidney transplant recipients receiving rituximab

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Purpose: BK virus is a clinically significant infectious complication in kidney transplant recipients (KTRs). This trend is more prevalent in KTRs requiring human leukocyte antigen (HLA) desensitization, who require lymphocyte depleting induction and are at high risk for rejection. Some studies suggest mycophenolate mofetil (MMF) dose reduction in this population to decrease the rates of BK virus infection. This study aims to evaluate the rates of BK viremia in highly sensitized kidney transplant recipients that receive different doses of MMF.

Methods: In this retrospective, single-center study, highly sensitized KTRs greater than 18 years of age who received rituximab and Thymoglobulin at Stanford Health Care will be evaluated for rates of BK viremia. Highly sensitized KTRs receive up to five doses of Thymoglobulin 1.5 milligram per kilogram as induction therapy post-kidney transplant along with a dose of rituximab 500 milligram intravenously prior to discharge. Two cohorts will be evaluated. Cohort A will include patients who received standard dose of MMF 1000 milligram by mouth twice daily. Cohort B will include patients who received reduced dose of MMF 500 milligram by mouth twice daily. Surveillance of BK viremia is done using quantitative polymerase chain reaction (PCR), and BK viremia is defined as BK virus load of 1,000 to 60,000,000 copies per milliliter (3.00 to 7.78 Log10 copies per milliliter) in the plasma. The following data will be collected: patient demographics, donor type and source, HLA match, kidney donor profile index (KDPI), calculated panel reactive antibodies (cPRA), infections, presence of other viruses, and transplant rejection and type, if applicable. This study will be submitted to the Institutional Review Board for approval. Comparisons of incidence of BK viremia between two cohorts will be analyzed using chi-squared test and Fisher's exact test.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-072

Poster Title: Safety of peri-operative lidocaine infusion for pain in cardiac surgery patients

Primary Author: Benny Yau, Stanford Health Care, CA; **Email:** byau@stanfordhealthcare.org

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Purpose: Lidocaine infusion for pain control is commonly used in peri-operative settings to optimize therapy and reduce opioid use. Atrial fibrillation is the most common post-operative arrhythmia to occur, especially in cardiac surgery patients. Lidocaine along with its antiarrhythmic properties can also increase the risk of developing arrhythmias. There is a gap in literature evaluating the risk of arrhythmias associated with lidocaine use in cardiac surgery patients. The objective of this study is to evaluate the safety of utilizing lidocaine infusion for pain in cardiac surgery patients and clarify whether it correlates to new onset post-operative atrial fibrillation (POAF).

Methods: This study has already been submitted to the Institutional Review Board for approval. It is a retrospective chart review in which the Society of Thoracic Surgeons database is used to identify cardiac surgery patients who had an elective coronary artery bypass graft or valve surgery and subsequently were infused with lidocaine for pain control post-procedure. Patients excluded from the study will comprise of emergent cardiac surgeries, history of arrhythmia prior to surgery, use of lidocaine not indicated for pain, patients on other antiarrhythmic medications besides lidocaine prior to the diagnosis of new POAF, and children. A comparison arm will be a cohort of the same time frame with patients not utilizing lidocaine for pain. To determine the contribution of lidocaine to new onset POAF, baseline characteristics will be analyzed for confounding factors that increase the risk of POAF independent of lidocaine. The following data will be collected: baseline characteristics (age, sex, body mass index, cardiac surgery type, past medical history, peri-operative medications, operative and post-operative data, length of hospital stay, 30-day mortality, and readmission), lidocaine regimen, indication, lidocaine blood level, new POAF diagnosis, diagnosis date, and electrolytes on the day of diagnosis (calcium, potassium, and magnesium). Protected health information will be de-

identified and recorded confidentially. The primary objective is to evaluate the presence of new onset POAF in post-cardiac surgery patients utilizing lidocaine for pain.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-073

Poster Title: Evaluation of daratumumab infusion-related reactions at a single academic medical center

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Purpose: Daratumumab has recently emerged as a promising treatment approach for patients with multiple myeloma. Daratumumab is well tolerated, and the most common adverse event is infusion-related reactions. Risk factors for infusion-related reactions such as disease burden or premedication use are not well defined for daratumumab. Evaluating for risk factors that may predispose patients to infusion-related reactions and management of reactions is important for better prevention and treatment of these adverse events. This study aims to evaluate potential risk factors associated with daratumumab infusion-related reactions and its management in patients with multiple myeloma or amyloidosis at a single academic medical center.

Methods: This study is a single academic medical center, retrospective chart review that has been approved by the IRB. Patients with multiple myeloma or amyloidosis who receive their first and all subsequent evaluable doses of daratumumab between November 16, 2015 and December 31, 2016 will be included. Patients under 18 years of age or treated with daratumumab for indications other than multiple myeloma and amyloidosis will be excluded. Infusion-related reactions will be graded as defined by CTCAE version 4.03. Other information that will be collected include: age, gender, height, weight, allergies, history of allergic reaction, history of cardiac or pulmonary disease, serum creatinine, complete blood count, clonal plasma cell percent on bone marrow biopsy prior to daratumumab therapy, CD38 percent in bone marrow biopsy prior to daratumumab therapy, serum or plasma M protein and immunoglobulin levels, serum free light chain levels, beta-2 microglobulin levels, lactate dehydrogenase, number of prior multiple myeloma therapies prior to daratumumab therapy,

transplant status, premedication used, daratumumab dose, daratumumab infusion duration, and use of concomitant chemotherapy. The primary objective will be to evaluate for specific patient and disease characteristics that may be associated with an increased risk or severity of daratumumab infusion-related reactions. Secondary objectives will be to describe and evaluate management of these infusion-related reactions. Informed consent will not be required for this study.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 11-074

Poster Title: Implementation of patient assistance program in a not-for-profit health system in northern California

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Purpose: New innovative medicines are emerging to treat complex autoimmune and cancer conditions. With the current heterogeneity of governmental and commercial health insurance coverage, patients are facing financial hardships to access such innovative medicines. The objective of this study is to evaluate the effect of a patient assistance program on affordability to medications for patients receiving their care in infusion centers in a not-for-profit health system in northern California.

Methods: Webinars will be coordinated with the drug manufacturers that offer patient assistance program (PAP) to financial counselors in each infusion center. The webinars will help the financial counselors to understand the eligibility criteria of the PAP and the application process. A web-based resource will be created and made accessible to financial counselors. The web-based resource will include a list of the medications that are offered through a PAP, and information guides that are drug or diagnosis specific to be distributed to patients to help them through the PAP application process. The outcomes of this study will be assessed by recording the number of approved PAP applications, out-of-pocket payments, uncompensated care costs, and number of patients on payment plans before and after implementing the PAP. All data will be recorded without participant identifiers and maintained confidentially. This study will be submitted to the Sutter Health Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 11-075

Poster Title: Duration of therapy and concomitant risk factors for vancomycin nephrotoxicity in pediatric patients

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Purpose: Purpose: With an adjustment and more aggressive vancomycin dosing, the risk of vancomycin induced nephrotoxicity has become a subject of interest in children receiving intravenous vancomycin. To determine the true risk of vancomycin nephrotoxicity in children at high risk and to secondarily determine whether a relationship exist between nephrotoxicity, duration of therapy and concomitant risk factors including receipt of nephrotoxic medications.

Methods: Method: After an institutional IRB approval, a retrospective cohort analysis was conducted from June 2012 to June 2015 at the University of California San Francisco Benioff Children's Hospital. Patients 3 months to less than 19 years who were admitted and received intravenous vancomycin therapy for greater than or equal to 48 hours were evaluated. The incidence of nephrotoxicity was defined as an increase in serum creatinine greater than or equal to 0.5 mg/dL or greater than or equal to 50 percent increase in baseline serum creatinine persisting for at least two consecutive levels. The primary outcome was incidence of nephrotoxicity. Secondary outcomes include duration of vancomycin therapy and concomitant risk factors including receipt of concomitant nephrotoxic medications. Univariate and multivariate analysis were conducted to identify factors contributing to nephrotoxicity.

Results: Results: Of 291 pediatric patients included, nephrotoxicity occurred in 19 (6.5 percent) patients. In a univariate analysis, weight, vancomycin initial and final dose, nephrotoxic factors including hypotension, respiratory failure, serum vancomycin trough concentration greater than or equal to 15 and concomitant receipt of nephrotoxic medications were significantly associated with nephrotoxicity. The median duration of therapy was 4 days and 3 days in the non-nephrotoxicity and nephrotoxicity groups respectively. Multivariate analysis identified final

serum vancomycin trough concentration greater than or equal to 15mg/dL and piperacillin/tazobactam as significantly associated with nephrotoxicity (odds ration 3.49, 95% confidence interval 1.20-10.1, p=0.021) and (odds ratio 3.138, 95% confidence interval 1.02-9.6, p=0.046).

Conclusion: Conclusion: Little to no nephrotoxicity takes place in high-risk pediatric patients receiving vancomycin. While vancomycin does not appear to be associated with nephrotoxicity, its concomitant use with known nephrotoxic medications and other risk factors may be associated with an increase in serum creatinine.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-076

Poster Title: Evaluation of vancomycin dosing in adult obese patients

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Purpose: The American Society of Health-System Pharmacists recommends dosing vancomycin 15-20 mg/kg every 8-12 hours using total body weight (TBW) in individuals with normal renal function with severe Methicillin-resistant Staphylococcus aureus infections. However, it is a common practice to use adjusted body weight (ABW) for obese patients due to difficulty determining the appropriate dosing weight. Using TBW to dose obese patients can increase the risk for nephrotoxicity and supratherapeutic trough levels. The purpose of this study is to evaluate the rate of therapeutic troughs attained in obese patients and attempt to determine the appropriate threshold for using ABW for vancomycin dosing.

Methods: A retrospective chart review will be conducted at a tertiary care academic medical center which has an institutional vancomycin dosing guideline. Patients admitted between November 2013 and October 2016 will be evaluated for this study. The inclusion criteria are patients at least 18 years of age, obese, defined as total body weight greater than 130% of ideal body weight, received at least 36 hours of vancomycin, creatinine clearance of at least 25 mL/min, and had a vancomycin trough level measured. A therapeutic vancomycin trough will be defined as a level between 10 to 20 mcg/mL. Patient information will be obtained utilizing the institution's electronic medical record. Data collection will include patient age, gender, total body weight, ideal body weight, and height. Dose of vancomycin, trough levels, date and time of trough levels, number of trough levels obtained, indication for vancomycin therapy, comorbidities and receipt of other nephrotoxic agents will also be gathered for analysis. The primary endpoint will be the rate of therapeutic vancomycin trough levels attained in obese patients. Secondary endpoints include time to therapeutic trough levels, number of subtherapeutic and supratherapeutic trough levels, incidence of nephrotoxicity and treatment failure.

Results: NA

Conclusion: NA

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 11-077

Poster Title: Evaluation of Naloxegol Use for Opioid-Induced Constipation

Primary Author: Christine Tran, UC Irvine Medical Center, CA; **Email:** chrit12@uci.edu

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Purpose: Currently, there are no published literatures regarding the use of naloxegol in cancer patients. The purpose of this study is to evaluate the efficacy and safety of naloxegol in all patients at UC Irvine Medical Center and to determine if the results are consistent with current literature.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective chart review will be performed using the electronic medical record to identify patients who have taken at least one dose of naloxegol. The following data will be collected: medical record number, admission/discharge date, age, sex, primary diagnosis, presence or absence of abdominal processes, history of constipation, and concurrent opioid use. Collected data such as pain scores before and after use, dosage used, stool consistency, and time to laxation will be used to determine the efficacy of naloxegol. Results will be compared the data found in literature. No patient identifiers will be used and confidentiality will be maintained.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-078

Poster Title: Effect of Transitions of Care Pharmacist Intervention on Heart Failure Mortality, Readmissions, and Emergency Department Visits at an Acute Care Hospital

Primary Author: Conor Bowman, University of California Irvine Medical Center, CA; **Email:** cbowman@uci.edu

Additional Author (s):
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Purpose: Primarily, this study's purpose is to evaluate the effect of a pharmacist's medication education during heart failure hospital admission and post discharge phone call on 30 day all-cause hospital readmission, 30 day mortality, and 30 day emergency department (ED) visits to standard of care. Secondarily, to identify factors associated with readmission or ED visits for this population, to track type of pharmacist intervention made to the primary team prior to discharge and to demonstrate whether pharmacist intervention is a cost-effective means to improve quality of care and reduce hospitalization costs associated with higher mortality and readmission rates.

Methods: This will be a quality improvement project comparing pharmacist intervention to standard of care. The study's population will include adult patients with heart failure diagnosis as primary cause for admission and followed by UC Irvine as outpatients. Patients less than 18 years old or who are mentally disabled will be excluded. Pharmacist will perform education with intervention-arm patients prior to discharge. This session's focus will be on adherence to and understanding of critical heart failure medications. Pharmacist may also provide interventions to care team regarding medication issues prior to discharge. A note will be recorded in the Electronic Medical Record (EMR) regarding the details of this patient education session and any interventions made. Patients will be contacted by phone within three days by the pharmacist. These encounters may include topics such as verification of patient's medications, patient's understanding of medications, medication storage, or adherence. This session will be recorded in EMR as well. 30 day readmission rates, mortality, and ED visits will be tracked afterwards through EMR. A parallel set of standard-of-care patients not followed by the pharmacist will also be tracked to determine if there is any difference in primary outcomes. Risk factors such as baseline ejection fraction, sex, ethnicity, renal impairment status, and other

comorbidities collected during patient's initial hospital visit will also be reviewed to determine whether these affected primary outcomes.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-079

Poster Title: Effects of sirolimus on thrombosis risk after lung transplant in patients with interstitial lung disease

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Additional Author (s):
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Purpose: Sirolimus is associated with an increased risk of venous thromboembolism (VTE) in lung transplant patients. Interstitial Lung Disease (ILD) is associated with high risk of thrombus after lung transplant, irrespective of sirolimus use. Practitioners may avoid sirolimus in ILD patients to minimize this risk; however, there are significant benefits when using sirolimus in lung transplant patients. The purpose of this study is to assess the risk of thrombus in ILD lung transplant patients treated with sirolimus versus a non-sirolimus based immunosuppression.

Methods: The primary objective of the study is to assess the risk of VTE in ILD lung transplant patients treated with sirolimus versus non-sirolimus based immunosuppression. The secondary objective is to determine if there is an association of sirolimus levels with the risk of VTE in ILD lung transplant patients. This study has been submitted to the Institutional Review Board for approval. There will be a retrospective chart review of all ILD patients transplanted from January 1, 2010 to August 31, 2016, estimated to be 48 patients. They will be divided into 2 groups based on history of sirolimus use. The following data will be collected: basic patient demographics, transplant, sirolimus use, sirolimus trough concentrations, anticoagulation use, VTE occurrence before and after transplant, VTE occurrence before and after sirolimus, risk factors for development of VTE and events. All data will be recorded without patient identifiers and maintained confidentially. VTE events will be assessed using the Narajo Adverse Drug Reaction Probability Scale to determine relation to sirolimus. A multi-variable regression model will be used to analyze occurrence of VTE in lung transplant patients with ILD taking sirolimus .

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 11-080

Poster Title: Utilization of a Bayesian clinical decision support tool to improve initial dosing and subsequent dose adjustments of vancomycin in the pediatric population

Primary Author: David Hughes, University of California, San Francisco (UCSF) Medical Center, CA; **Email:** David.Hughes@ucsf.edu

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Purpose: Clinical data supporting the use of vancomycin is offset by its narrow therapeutic window and need for therapeutic drug monitoring (TDM). Clinical decision support (CDS) tools have been developed to aid clinicians in optimizing vancomycin dosing, yet there is a paucity of data assessing the extent to which these CDS tools may improve dosing of vancomycin as compared with a pharmacist alone.
This two-part retrospective observational cohort study will compare standard protocols for dosing vancomycin at UCSF Benioff Children's Hospital to model-based recommendations using Insight-Rx, a software tool utilizing a pediatric-specific pharmacokinetic model and Bayesian clinical decision support for optimal dosing.

Methods: The study will include approximately 200 pediatric patients between the ages of 1 and 18 years (excluding those with end-stage renal disease receiving hemodialysis or those receiving continuous renal replacement therapy). Patients were admitted to UCSF Benioff Children's Hospital from July 1, 2015 to July 1, 2016 and received intravenous vancomycin and had at least one vancomycin level measured. In the first part of this study, pharmacokinetic parameters will be calculated for all patients, and the initial dosing regimen based on a UCSF protocol will be compared to a model-based regimen based on a published pharmacokinetic model recommended by the Insight-Rx CDS tool. The ability to achieve pharmacokinetic targets of interest (AUC24, Ctrough,ss) will be assessed. Patients with more than one vancomycin level obtained will be included in the second part of the study, wherein actual level-based dosing adjustments made by pharmacists will be compared to recommendations made by the Bayesian-driven CDS tool with regard to achieving pharmacokinetic targets.

The outcomes of this study will contribute to the optimization of vancomycin dosing in the pediatric population and will aid in assessment of the value of incorporating software-driven TDM into general practice.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-081

Poster Title: Pharmacist impact on reducing hospital readmission rates and length of stay; integrating pharmacists into the transition of care team

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Purpose: Avoidable hospital readmissions lead to decreased patient quality and cost the healthcare system billions of dollars each year. According to Centers for Medicare and Medicaid Services (CMS), in 2013 the national average for 30-day hospital readmission rates was 17.5%. Medication related problems are factors identified as leading to hospital readmissions. The 30-day hospital readmission rate at the medical groups 75 bed contracted skilled nursing facility (SNF) is currently at 25%. The objective of this study is to evaluate the impact on reducing hospital readmission rates and length of stay by integrating a pharmacist into the transition of care team.

Methods: This study will be submitted to the Institutional Review Board for approval. A pharmacist will be integrated into the SNF care team to perform a comprehensive medication review on enrolled, capitated (at risk) patients in the medical group. Following the comprehensive medication review, the pharmacist will consult with the SNF physician to resolve any medication related problems (MRPs) or gaps in care before patients are discharged. The pharmacist will also meet with the patient prior to discharge to provide medication counseling. Following discharge, a member of the pharmacy team will contact the patient by phone at approximately 24-48 hours, 7 days, and 30 days to identify and resolve any additional MRPs, assess medication adherence, and update the medication list in the electronic health record. For any MRPs identified 24-48 hours post discharge the pharmacy team will consult with the SNF physician to resolve. Any MRPs identified at 7 days or 30 days post discharge, the pharmacy team will consult with the patient's primary care physician to resolve. At each interaction with the patient, the pharmacy team will track MRPs, interventions, and

intervention implementation in a database. SNF length of stay and hospital readmission rates at 7 days and 30 days will be calculated from medical claim data.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-082

Poster Title: Evaluating implementation of pharmacist services in an underserved primary care clinic to optimize reductions in 30 day readmissions, associated health system costs, and medication discrepancies

Primary Author: Brittany Dougherty, Mercy Medical Center, IA; **Email:** bdougherty@mercycare.org

Additional Author (s):

Purpose: Evidence shows that integrating a pharmacist into a multidisciplinary team within a primary care clinic improves patient outcomes. These improvements include decreased readmissions; improved medication literacy; improved adherence; and achieved health goals (i.e. blood pressure, hemoglobin A1c targets). Limited evidence exists in literature to support the benefits of a clinical pharmacist in a complex underserved primary care clinic. The objective of this study is to determine the impact of clinical pharmacist interventions in this patient population to achieve a reduction in 30-day readmission rates, associated health system costs, and medication discrepancies.

Methods: This study will be submitted to the Mercy Medical Center Institutional Review Board for approval. Using the electronic medical health record, patients will be recruited based on the following inclusion criteria: age 18 years or greater, and one or more of the following; visit(s) to the underserved clinic in the previous six months, pharmacist documented interventions, and 30-day readmission to Mercy Medical Center's emergency department in the preceding 12 months. Exclusion criteria include: less than 18 years of age, no visits to underserved clinic, and zero 30-day readmission visits to the emergency department in the preceding 12 months. The data will be correlated retrospectively at the end of the six month study with a control group to assess potential 30-day readmissions prevented through pharmacist encounters (chart interaction or personal encounter), potential cost avoidance from emergency room visits, total number of medications incorrectly documented, and total number of therapy interventions. The control group will be assessed to account for variation between groups. Patient information collected will include age, gender, primary diagnosis, vitals, laboratory values, pain scores, medication lists, intervention notes, and provider notes. The data will be recorded with patient identifiers and be password protected for confidentially of patient information.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-083

Poster Title: Implementation of pharmacist-led medication reconciliation for pre-operative total knee and total hip replacement patients

Primary Author: Elizabeth Glynn, Mercy Medical Center - Cedar Rapids, IA; **Email:** elizabeth.glynn.10@gmail.com

Additional Author (s):

Purpose: Medication reconciliation for pre-operative patients is currently being performed by five different nurses at this institution. Surgeons have expressed interest in having the pharmacy department manage medication reconciliation for these patients due to issues with inaccurate and incomplete medication lists prior to surgery. The objective of this study is to determine if pharmacy-led medication reconciliation for pre-operative total knee and hip replacement patients prior to surgery would result in decreased medication-related hospital re-admissions, adverse drug events, and missed education opportunities.

Methods: Pharmacists and pharmacist interns will be a part of the medication reconciliation process. The pharmacist interventions will include: implementing a standard form to follow when performing medication reconciliation, conducting the medication reconciliation, documenting any changes that were made to the medication list, providing medication education if requested or deemed necessary for the patient, and contacting the patient's pharmacy if adequate medication information cannot be collected from the patient. Patients who have undergone total hip or knee replacement surgery four months prior to pharmacist intervention and those who will be receiving these surgeries four months after pharmacist intervention is implemented will be identified by the electronic medical record. The two patient groups will be compared and the following data will be collected: patient age, gender, number of medications prior to medication reconciliation, number of medications after medication reconciliation, number of changes made to the patient's medication list, addition of an anticoagulant, reported adverse drug events, and education regarding medications received. Provider documentation post-operatively will also be reviewed for medication-related information. All data will be recorded without patient identifiers and maintained confidentially. Data will be reviewed and compared to determine the impact of the pharmacist interventions. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-084

Poster Title: Low dose naloxone for opioid induced respiratory depression in the emergency department

Primary Author: Michael Thiefault, Mercy Medical Center - Des Moines, IA; **Email:** mthiefault@mercydesmoines.org

Additional Author (s):
CATHERINE DEFINO

Purpose: The purpose of this study is to determine the safety and efficacy of low dose naloxone (0.04mg) compared to standard doses previously given in the ED. When patients present to Mercy Medical requiring naloxone administration, they will receive a provider specific dose to reverse respiratory and CNS effects. High doses in chronic abusers can cause acute mania, hypertensive crisis, pulmonary edema and more. This study would look at the safety/efficacy of 0.04mg , as well as the incidence of AWS when compared to previous naloxone doses given (0.4mg-2mg)

Methods: Using accudose dispensing data, I will identify retrospectively the patients who received naloxone 6 months prior to the study start date. Prospectively we will identify patients receiving naloxone by printing accudose dispensing data weekly. The provider will have the option to follow study protocol if the patient presents without being apneic or in respiratory arrest. The pharmacy Department has developed naloxone dilution kits to be placed inside the ED accudose to help with the timely administration of naloxone. The 0.04mg/mL naloxone solution will be made by drawing up 9mL of NS in a 10mL syringe, then drawing up 1mL of 0.4mg/mL naloxone. The initial dose will be 0.04mg and doubled every 2-3 minutes until desired response. The primary endpoint is the proportion of subjects with reversal of respiratory and CNS reversal within 1 hour of initial naloxone administration. Reversal defined as; O2 sats > 95%, RR >12, GCS >12. Secondary endpoints include; proportion of subjects developing acute withdrawal symptoms post naloxone. Defined as; RASS greater than or equal to +1 plus one of the following; HR>100, BP >140/90, diaphoretic. Other secondary endpoints include length of hospital stay, ED stay and total naloxone dose given. Date collection will be started after the next emergency medicine provider meeting, and the appropriate statistical analysis will be performed once all data collection is final.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-085

Poster Title: Surviving sepsis quality improvement

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Purpose: Severe sepsis and septic shock are major health concerns that require prompt treatment. The Surviving Sepsis Campaign highlights speed and appropriateness of therapy as influencers of positive outcomes. The 3 and 6 hour bundles were created as guidelines to help practitioners treat septic patients appropriately. As of October 2015, the Centers for Medicare and Medicaid Services has established the updated 3- and 6-hour bundles from the Surviving Sepsis Campaign as a core measure. The objective of this quality improvement project is to assess compliance with the entire 3-hour bundle with the primary objective being increased rate of compliance.

Methods: These objectives will be assessed through retrospective chart review to establish all areas of the bundle that we are falling out on. Patients who meet criteria for severe sepsis and septic shock will be included in this study. The Surviving Sepsis guidelines are specific to adult patients and diagnoses of severe sepsis and septic shock, so patients under age 18 as well as those with simple sepsis who do not progress to severe sepsis or septic shock will be excluded. Patients will also be excluded if comfort care directives are placed either prior to or within 3 hours of meeting sepsis criteria. Due to skip logic, current data abstraction stops as soon as a metric is not passed. The first intervention will be providing education to the Emergency Department (ED) physicians on what antibiotics meet the CMS core measure. Because the sepsis bundles are all or nothing, if retrospective chart review reveals that we are also not meeting other metrics in the bundle, secondary interventions will be implemented at that time. The antibiotic intervention will begin in October 2016. From October through December 31, data will be monitored concurrently through daily sepsis alerts to provide guidance and feedback to ED physicians. Beginning January 1, chart review will begin to assess if compliance with the 3 hour bundle is increasing.

Results: n/a at this time

Conclusion: n/a at this time

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-086

Poster Title: Evaluation of pharmacist involvement in discharge medication reconciliation

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Purpose: A pharmacist's impact on health care by reducing medication errors may result in better patient outcomes and decreased hospitalizations. By fully reviewing patient medication regimens before hospital discharge, pharmacists are able to identify medication discrepancies before they occur. This study is to determine if involving a pharmacist in discharge medication reconciliation could reduce medication errors and hospital readmission rates within 30 days of patient discharge.

Methods: An observational analysis of all patient discharges from the hospital to affiliated long-term care facilities will be recorded between October 1, 2016 and December 31, 2016. The collection time may be extended to achieve a goal of 50 patients. Pharmacists at the long-term care pharmacy will track patients discharged from the hospital to a facility and document medication errors that occurred on discharge. Inpatient hospital pharmacists will simultaneously document the patient discharge medication reconciliations in which they participated in. Patients will be placed into one of two groups based on discharge medication reconciliation with or without pharmacist involvement. The primary objective is comparison of reported medication error rates between the two groups. The secondary objectives include hospital readmission rates within 30 days of discharge and the time pharmacists spend on medication error resolution.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-087

Poster Title: Outpatient pharmacist-led anticoagulation management in patients with left ventricular assist devices: A pilot study

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Additional Author (s):
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Purpose: Patients with left ventricular assist devices (LVADs) require close monitoring of warfarin therapy due to their increased risk of both thrombosis and bleeding. Numerous studies have demonstrated the efficacy of pharmacist-managed anticoagulation services in both the inpatient and outpatient setting, but less data is available in LVAD patients. The objective of this study is to describe and compare the safety and efficacy of a center-based pilot study, which provides pharmacist-led warfarin management to a small cohort of LVAD patients.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients with a left ventricular assist device and anticoagulation managed by an advanced heart failure cardiology team will be approached for inclusion in the pilot study. If patient consent is granted, a pharmacist will lead warfarin management in collaboration with the cardiology team in a pilot group of patients over a three month period. The majority of INR values will be collected via point of care devices in the patient home and electronically transmitted to the clinic for review. After each reading, patients will be interviewed over the telephone by a pharmacist. The pharmacist will develop and finalize a management plan with a cardiologist before communicating with the patient and documenting the encounter. The objective of the study is to compare time in therapeutic range between patients managed by a pharmacist to those receiving standard care. Secondary objectives to be evaluated include the percentage of recommendations accepted, incidence of thrombosis and bleeding, and patient and staff satisfaction with pharmacist-led services.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-088

Poster Title: Development and Implementation of a Hospital Discharge Medication Reconciliation Process Assisted By Student Pharmacists at a Family Medicine Clinic

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Purpose: Approximately 60% of all medication errors occur during times of care transitions. Pharmacist integration in the transitional care has been shown to reduce preventable readmissions and improves health outcomes. At Northeast Iowa Family Practice Center (NEIFPC), pharmacists are not currently involved in the transition of care for clinic patients who are being discharged from the hospital. This project aims to improve the discharge process currently performed at the Northeast Iowa Family Practice Center through the implementation of a new medication reconciliation service, largely administered by student pharmacists with management by licensed pharmacists.

Methods: A templated discharge medication reconciliation note was created in the NEIFPC electronic medical records. Template elements include the following: hospital stay synopsis, a list of the patient's current medications while inpatient on day of planned discharge, medications that have been started, stopped and/or adjusted while they were inpatient, drug therapy problems identified by the pharmacist or pharmacy student while inpatient and drug therapy recommendations the pharmacist or pharmacy student made to the inpatient physicians, and for the patient's primary clinic physician to address.
Eligible patients include adult patients (≥18 years old) from NEIFPC who are admitted to a local hospital and receive inpatient care from the NEIFPC inpatient team. Patients who are discharged on Saturday or Sunday are excluded. Pharmacists and pharmacy students will perform bedside rounds with eligible patients and round with the NEIFPC inpatient team. When an eligible patient will be discharged from the hospital the pharmacist or pharmacy student will complete the templated discharge medication reconciliation note in the NEIFPC electronic

medical record and reconcile the clinic medication list. **T**he study will measure time requirements of the pharmacist and pharmacy students as well as physician acceptance of drug therapy recommendations. Descriptive statistics will be utilized. The project has been reviewed by the NEIFPC Ethics Committee and satisfies criteria to be considered a quality improvement project.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-089

Poster Title: Evaluation of behavioral health patient readmission rates before and after treatment with the once-monthly injectable antipsychotic paliperidone palmitate

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Purpose: Patients with chronic mental illness and a history of symptom relapse due to medication non-compliance are ideal candidates for long-acting antipsychotic treatment. Paliperidone palmitate (Invega Sustenna) is the most frequently used long-acting antipsychotic at a local community hospital. The primary objective of this study is to evaluate patient readmission rates to the behavioral health unit before and after receiving paliperidone palmitate.

Methods: This is a retrospective study that compares readmission rates for behavioral health unit patients before and after treatment with paliperidone palmitate. Patients admitted or transferred to the behavioral health unit between March 2014 and May 2016 with a medication order for paliperidone palmitate were eligible for this study. Medical profiles were reviewed on each admission/transfer for age, gender, purpose for admission/diagnosis, and antipsychotic medications used before and during inpatient stay. Patients who received the 234 mg dose but did not receive or were not scheduled to receive the 156 mg dose within seven days were excluded. Dates of each behavioral health unit admission were recorded for analysis. Admission data were compared before and after treatment and were analyzed using appropriate statistical methods. This study will be reviewed by the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-090

Poster Title: Compliance with the Surviving Sepsis Campaign 3-hour bundle: a retrospective review of sepsis management

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Purpose: The Centers for Medicare and Medicaid Services recently released its core measure for sepsis management, which aligns with the Surviving Sepsis Campaign guidelines. Sepsis management is complex, and promptness of therapy can impact patient outcomes. The 3-hour bundle includes initiating broad spectrum antibiotics, obtaining blood cultures prior to antibiotics, measuring initial lactate level, and administering 30 ml/kg of crystalloid fluids for indicated patients. This study's objective is to assess compliance with guideline-directed recommendations from the 3-hour bundle to identify potential barriers to early sepsis management.

Methods: A single-center, retrospective chart review will be performed on patients diagnosed with sepsis from March 2016 to August 2016. Patients transferred from other hospital facilities will be excluded from the study. The electronic medical record system and International Classification of Diseases (ICD-10) codes will be used to obtain a roster of septic patients. Data on patient demographics, sepsis diagnosis, emergency department admission date, sepsis triage time, and sepsis order set utilization will be collected. Elements from the 3-hour bundle will be analyzed, which include time to first antibiotic administration, time of blood culture draw, time of lactate draw, initial lactate level, proper fluid administration (i.e. 30 ml/kg) for indicated patients and time of fluid administration. Guideline-recommended compliance with the 3-hour bundle will be evaluated. The study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-091

Poster Title: Analysis of gastrointestinal bleeds and proton pump inhibitor prophylaxis in patients requiring dual antiplatelet therapy at Allen Hospital.

Primary Author: Jacob Peterson, UnityPoint Health - Allen Hospital, IA; **Email:** jacob.peterson@unitypoint.org

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Purpose: The Clopidogrel and the Optimization of Gastrointestinal Events Trial (COGENT) supported using proton pump inhibitors for patients prescribed dual antiplatelet therapy in an effort to reduce gastrointestinal bleeding. This study will have two arms. In the retrospective arm, the objective is to determine the percentage of patients at this hospital receiving an appropriate proton pump inhibitor in addition to dual antiplatelet therapy after stenting. In the prospective arm, interventions to increase appropriate therapy will be implemented. Upon conclusion, both groups will be compared to determine if a decrease in gastrointestinal bleeding occurred after intervention without increasing cardiac events.

Methods: This study has been submitted to the Institutional Review Board for approval. Patients undergoing percutaneous coronary intervention at Allen Hospital during the period from August 2014 to July 2016 will be included in this study. The electronic medical record will be used to identify medication regimens, diagnosis codes, and cardiologists covering each case. All data will be collected without patient identifiers to maintain protected health information. Patients meeting inclusion criteria will be categorized by the specific dual antiplatelet regimen and proton pump inhibitor prescribed. The percentage of patients receiving appropriate therapy will be recorded as well as the occurrence of any gastrointestinal bleeding or cardiac events post- procedure. After determining initial prescribing rates of proton pump inhibitors, education will be provided to the cardiologists. The order set in the electronic medical record will be updated to include a proton pump inhibitor as a default order to increase the rate of prescribing. Patients undergoing procedures for three months after these interventions will be included in the prospective arm. After the prospective data has been collected, the two study groups will be compared and differences in prescribing habits will be documented. The

incidence of patients who present with gastrointestinal bleeding will be recorded for each group to determine if the intervention resulted in a significant decrease in admissions due to gastrointestinal bleeding.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 11-092

Poster Title: Implementation of vancomycin dosing protocol specific for obese patients

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Purpose: Vancomycin requires therapeutic drug monitoring for optimal antibacterial effect. Higher incidence of supratherapeutic troughs occur in obese patients as vancomycin demonstrates two-compartment distribution. The purpose of a vancomycin dosing protocol specific for obese patients aims to reduce the occurrence of supratherapeutic troughs, acute kidney injury, dialysis or extended hospitalization after administration of a loading dose of vancomycin. This institution's current protocol utilizes a 25mg/kg loading dose with subsequent 20mg/kg dosing at intervals determined by estimated creatinine clearance. The modified protocol divided the initial loading dose into two doses given six hours apart.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients included in this study will be adults 18 years of age or older, have a BMI greater than or equal to 35 kg/m2 and pharmacy consulted to dose vancomycin. Patients that do not meet criteria are pre-op/intraoperative vancomycin dosing, patients on hemodialysis, or physician managed vancomycin dosing. A six-month, retrospective sample of patients who met this study's inclusion criterion will be identified to determine a baseline occurrence of supratherapeutic troughs. Prospectively, a six-month data collection of obese patients receiving divided loading doses of vancomycin will be completed. The primary outcome measure is the percentage of obese patients that receive divided loading doses of vancomycin and have a therapeutic trough within goal range of 15-20 mcg/mL. Secondary outcomes included percentage of troughs that are above or below goal range of 15-20 mcg/mL.

Results: Research in-progress

Conclusion: Research in-progress

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-093

Poster Title: Utility of traditional severity markers in Clostridium difficile infections in solid organ transplant patients

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Purpose: Solid organ transplant (SOT) patients are at a high risk of contracting Clostridium difficile infections (CDI) due to chronic immunosuppression and a propensity to receive multiple courses of antimicrobials. Management of CDI in SOT patients poses a unique challenge since this population generally has disease-altered laboratory parameters. As a result, commonly utilized laboratory variables for classifying CDI severity may not be accurate, putting patients at risk for inappropriate therapy. This project aims to analyze the differences in severity categorization using traditional markers of CDI in SOT patients.

Methods: The study will be submitted to the Institutional Review Board prior to commencement. This is a retrospective cohort study of SOT versus non-SOT patients experiencing their first episode of CDI at Beth Israel Deaconess Medical Center between 2008 and 2016. Patients will be identified through a report of all patients with a positive Clostridium difficile stool toxin assay or PCR result. Only first cases of CDI will be included. The SOT-cohort will be those with CDI following transplantation. A comparator cohort of non-SOT patients will be included from the same time period. All patients will be included in they were deemed infectious and treated for CDI, and will be excluded if they have an active malignancy and are receiving chemotherapy or are being treated for a recurrent CDI. Data collection will include demographics, transplant history, CDI characteristics, and variables to assess severity based on multiple scales. The primary study endpoint is the rate of concordance for all patients considered severe or severe complicated in existing CDI scales. Secondary endpoints include the initial CDI treatment received and rates of clinical success by cohort group. Variables will be

analyzed using McNemar's and t-test, as appropriate. A multivariate logistic regression analysis will be used to determine which laboratory parameters and CDI-related characteristics may be more clinically useful in determining true CDI severity in the SOT population.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-094

Poster Title: Impact of a new computerized provider order entry vancomycin dosing nomogram on target trough attainment

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Purpose: The effect of vancomycin exposure on treatment has driven many institutions to implement complex dosing protocols for initiation of therapy. Previous reviews at our institution demonstrated that a simplified protocol resulted in a 48% rate of initial target trough attainment. A new computerized order entry protocol was initiated this year with the goal of improving the rate of initial target trough attainment. The type of infection, weight and estimated renal function are the primary determinants. The purpose of this study is to determine if a new vancomycin dosing nomogram improves achievement of initial therapeutic trough compared to the previous nomogram.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients will be identified using clinical databases to generate a report for inpatients treated with vancomycin at Beth Israel Deaconess Medical Center with initial troughs documented for the months prior to and the month following nomogram implementation. Inclusion criteria are patients dosed appropriately per nomogram, treated for at least 72 hours with vancomycin, and not on hemodialysis dosed by the Nephrology service. Data to be collected include patient demographics, estimated renal function at the time of dosing, stability of renal function, indication for vancomycin therapy, and concomitant nephrotoxic agents. The goal trough range will be determined from the indication entered during order entry and/or documentation in care notes. Levels drawn greater than 2 hours from a true trough time will be extrapolated using population based pharmacokinetic calculations. The primary outcome will be the frequency of target range attainment at the time of the first steady state trough between the groups pre and post nomogram. Those values outside the range will be described as either supertherapeutic or subtherapeutic with a percent discrepancy. Given that weight and

estimated renal function are two primary fixed variables for the nomogram, other contributing patient factors that may affect performance such as unstable renal function, extremes of age, or weight will be assessed for impact on the primary outcome.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-095

Poster Title: Fosaprepitant for the prevention of chemotherapy-induced nausea and vomiting in allogenic and autologous hematopoietic stem cell transplant patients

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Purpose: Chemotherapy-induced nausea and vomiting (CINV) is a common complication of cancer therapy. Patients undergoing hematopoietic stem cell transplant (HSCT) have a higher risk of developing CINV, due to the administration of multi-day moderately and highly emetogenic chemotherapy regimens, in addition to the emetic response associated with the infusion of cryopreserved stem cells. There are limited data evaluating the use of fosaprepitant (FOS) in the HSCT setting. In 2012, Beth Israel Deaconess Medical Center converted to a fosaprepitant antiemetic protocol. A review is warranted to evaluate the efficacy of the addition of FOS to autologous and allogeneic HSCT antiemetic regimens.

Methods: Prior to commencement, this retrospective medical record review will be submitted to the Institutional Review Board for approval. The study will include patients 18 years and older, who received conditioning regimens for allogeneic or autologous HSCT from 2009 to 2016. Patients will be divided into two groups: the control group will comprise patients who received standard antiemetic regimens without FOS from 2009 to 2011, and the FOS group will comprise patients who received standard antiemetic regimens plus FOS from 2012 to 2016. The primary endpoint is no emesis during and after the conditioning period in each group. Secondary outcomes include reduction in the amount of supplemental anti-emetics (total number of breakthrough antiemetic doses per patient), percentage of patients with no delayed emesis, total number of emetic episodes per patient, and complete response rate (defined as no emesis and no breakthrough antiemetic use). Pertinent demographics, chemotherapy regimen, emesis reported, timing of emesis (acute versus delayed) and as needed anti-emetic use will be collected.
Based on earlier trials, we estimate that the absence of emesis in the FOS arm will be 65%. Therefore, a sample size of 79 patients per group will provide 80% power at an alpha of 0.05 to

detect a 25% reduction of emesis. Categorical variables will be analyzed using Fisher's exact test and continuous variables will be analyzed using t-test and Mann-Whitney test.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-096

Poster Title: Impact of a steroid free immunosuppressive regimen on patient and graft outcomes in pancreas transplant recipients

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Purpose: For decades, steroids have been a component of immunosuppressive regimens in solid organ transplant for prevention and treatment of rejection. There are concerns regarding long term steroid use, due to their association with hypertension, hyperlipidemia and post-transplant diabetes. For these reasons, the use of steroid free immunosuppressive regimens following pancreas transplant has increased over the past decade. Most studies to date involving pancreas transplant recipients had short term follow-up, evaluating outcomes six months to one-year post-transplant. The purpose of this study is to evaluate the risks and benefits of steroid withdrawal in pancreas transplant recipients at three years post-transplant.

Methods: This study will be submitted to the Institutional Review Board for approval. It is a retrospective chart review of patients who underwent a pancreas transplant at Beth Israel Deaconess Medical Center (BIDMC) between May 1989 to October 2013. Prior to 2004, steroid maintenance therapy following pancreas transplant was standard at BIDMC. After 2004, a steroid free maintenance immunosuppressive regimen was adopted. Patients who received a pancreas transplant will be identified from a data repository and screened for age over 18 years and the absence of graft failure within two weeks of transplant for inclusion. The primary outcome is a composite outcome of pancreas graft survival, patient survival and rejection rates at three years post-transplant. Secondary outcomes include readmission rates at one month and three years post-transplant, need for antibiotics within 30 days of transplant, immunosuppression levels at 14 days, 3 months, 6 months, 1 year and annually post-transplant, rates of infection, rates of malignancy and the number of patients who resumed prednisone in the steroid free group. Patients included in the steroid free group are those who did not receive

steroids after postop day seven. Graft loss will be defined as a sustained return to insulin (greater than 30 days of use) or graft removal. Acute rejection will be defined as biopsy proven rejection that was treated or rejection that was treated without biopsy results.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 11-097

Poster Title: Fentanyl to hydromorphone conversion in critically ill, opioid tolerant patients

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Purpose: Fentanyl is the cornerstone of intensive care analgesia and sedation at the Beth Israel Deaconess Medical Center (BIDMC). A subset of patients develop tolerance to fentanyl, leading to higher dose requirements (greater than 400 mcg per hour) and diminished effects. Switching these patients to lower dose hydromorphone intravenous infusions may lessen opioid burden and improve pain management. Opioid equianalgesic conversion is complicated in critically ill patients given their altered kinetics and functional impairment. The objective of this study is to evaluate a fentanyl to hydromorphone infusion conversion, assessing dose equivalence, tolerability, and efficacy.

Methods: This study will be submitted to the Institutional Review Board for approval. It is a single center retrospective chart review of patients who underwent an opioid conversion from a fentanyl to hydromorphone infusion between July 2014 and July 2016 in the intensive care units (ICU) of BIDMC. All patients aged 18 years and older who received fentanyl at an infusion rate greater than 400 mcg per hour and were transitioned to hydromorphone will be evaluated for inclusion. Patients who received non-ICU or comfort-focused infusions will be excluded. The primary outcome is pain scores, measured as an average of the patient's pain levels over 48 hours, 24 hours before and after the opioid conversion. Secondary endpoints include respiratory rate, sedation level, and blood pressure values. Secondary endpoints will be measured as averages over a 48-hour interval, 24 hours pre and post conversion. Data collection will also include indication for conversion and patient demographics. Data will be analyzed using Fisher's exact test and chi-squared test for categorical data, Student's t-test for continuous data, and univariate and multivariate logistic regression for clinical outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Evaluative Study

Session-Board Number: 11-098

Poster Title: Analysis of missed doses of venous thromboembolism prophylaxis medication in hospital inpatients

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Purpose: Venous thromboembolism (VTE) is the most common preventable cause of in-hospital mortality, and proper VTE prophylaxis has been shown to prevent VTE. There is a gap in the literature regarding the reasons for missed doses of pharmacological VTE prophylaxis. Missed doses of VTE prophylaxis medications in the inpatient setting may lead to an increased risk of thrombotic events and readmissions. The objective of this study is to quantify and describe the most common reasons for missed doses of VTE prophylaxis.

Methods: All clinical research represented in this abstract was approved by the Brigham and Women's Hospital Institutional Review Board. A report of ordered medication doses for VTE prophylaxis for inpatients over an eight month period (January 1, 2016 to August 31, 2016) was compiled from the electronic inpatient medication administration record. The raw data included all ordered doses of unfractionated heparin and low molecular-weight heparin, excluding doses with non-subcutaneous route of administration, non-inpatient areas, unknown administration status, subcutaneous heparin doses other than 5,000 units, and subcutaneous enoxaparin doses other than 40 mg. The report included documentation of given and missed doses obtained from the electronic medication administration record (MAR), reasons for the missed doses and free text comments about the missed doses. The proportion of missed doses was calculated. The reasons for missed doses were categorized and tabulated. Free text comments for missed doses were also reviewed.

Results: A total of 106,730 VTE prophylaxis doses ordered for admitted patients over a 8-month period were analyzed. The proportion of ordered doses that were not administered was 9.89% (10,551/106,730). The four most common reasons for missed doses were "patient/family

refusal" (60.5%, 6,381/10,551), "contraindicated" (15.4%, 1629/10,551), "per MD order" (11.7%, 1230/10,551), and "patient not available" (4.8%, 504/10,551). These reasons accounted for more than 90% of missed doses. Comments about missed doses were added in 759 of the 6,381 refusals, and included comments such as, "patient ambulating frequently", "patient educated about VTE risks", "patient being discharged home" and "MD aware". VTE Prophylaxis doses given in ICU vs. non-ICU settings were also analyzed to assess if different settings affect the data. Out of 5645 doses given in ICU, missed doses (335/5645) only accounted for 6% whereas in non-ICU settings, 10% (10216/101085) doses were missed. The two most common reasons for missed doses in ICU settings were "doses held for various reasons" (7.8%, 26/335), and "going to OR" (5.7%, 19/335).

Conclusion: Missed doses of VTE prophylaxis medication often occur for non-medical reasons, such as patient/family refusal and unavailability of the patient at the scheduled time of dose. Education to prevent patient/family refusal of VTE prophylaxis medication is a significant area of focus for improved healthcare outcome and opportunity for pharmacy-led counseling interventions. Implementing VTE prophylaxis education led by pharmacy for patients and family members, including review of the risks of missing doses, may help reduce the number of missed doses, thereby reducing the risk of VTE and readmissions. Supplemental anticoagulant education efforts can also help assure compliance with the medication safety Joint Commission as a National Patient Safety Goal.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-099

Poster Title: Adherence, bleeding, and thrombosis rates following implementation of a pharmacist-led direct oral anticoagulants (DOAC) clinic

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Purpose: Direct oral anticoagulants (DOACs) have shorter half-lives compared to warfarin; therefore, missed doses can lead to significant gaps in anticoagulation coverage and a high risk of thrombotic events. Previous studies have demonstrated improved adherence to DOACs in patients who were monitored and educated by pharmacists. The objective of this study is to determine if a pharmacist-run anticoagulation service, monitoring patients for adverse events as well as appropriate use and providing education on the importance of anticoagulation therapy, leads to an improved adherence and lower rates of bleeding, thrombosis, and mortality.

Methods: This study will be submitted to the Institutional Review Board for approval. Cardiovascular specialists at a cardiology clinic affiliated with a community hospital will provide a list of patients who were on a DOAC from September 2015 to August 2016 (historical control group) and a list of patients who are presently on a DOAC (observation group). The latter group meeting the inclusion criteria will be contacted via telephone and invited to participate in a DOAC clinic. Patients 18 years or older receiving DOAC therapy from the cardiology clinic will be included. Vulnerable and/or protected populations will be excluded. The initial appointment with the pharmacist will be in person and at least monthly thereafter in person or via telephone. The pharmacist will assess the DOAC therapy (indication, drug, and dose based on renal and hepatic functions) and screen for drug-drug interactions. All patients seen in the DOAC clinic will be provided with a print-out of patient drug information. The data that will be collected include demographic information, past medical and medication history, prescription and safety data. All data will be secured and maintained confidentially. The primary endpoint of adherence rate will be reported as a dichotomous variable for the proportion of days covered

(PDC) of 80% or more and analyzed using the chi-squared test. Thrombosis, bleeding, and mortality will be analyzed with Fisher's exact test.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-100

Poster Title: Restricting meropenem use in a community hospital: a retrospective review of clinical and economic outcomes

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Purpose: Amidst the growing prevalence of bacterial resistance and concern for patient safety, antimicrobial stewardship has become a national priority. Monitoring and decreasing unnecessary and/or inappropriate use of broad-spectrum antibiotic agents, like carbapenem antibiotics, is vitally important to preserving the efficacy of these agents in the years to come. The objective of this study is to evaluate meropenem utilization pre- and post- stewardship audit interventions.

Methods: This study will be submitted to the Institutional Review Board for approval. Meropenem utilization at a 140 bed community hospital will be audited by pharmacists within 24 hours of order entry from October 2016 through March 2017. The primary outcome will be appropriateness of meropenem use based on documented indications, including, but not limited to, empiric treatment of health-care associated infections in patients with recent exposure to extended-spectrum beta-lactam agents and prior infection or colonization with a resistant gram-negative bacteria. If pre-determined utilization criteria are not met, the pharmacist will contact the prescriber to suggest appropriate changes. Secondary outcomes measured will include Days of Therapy (DOT) per 1000 patient days, number of unique patients, length of stay (LOS), and the cost of meropenem doses administered, each reported as a monthly average. Appropriateness of meropenem use as well as meropenem consumption and cost data from January 2015 through September 2016 will be reviewed for comparison; both pre- and post-intervention data will be obtained through MIDAS and the electronic medical record. Statistical analyses will utilize T-test for continuous variables and Fisher's Exact test or Chi-square test (depending on sample size) for nominal variables.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-101

Poster Title: Impact of pharmacy driven intervention to meet the Paul Coverdell National Acute Stroke Registry Consensus Measures

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Purpose: Per the Center for Disease Control, stroke is a leading cause of death and serious, long-term disability in the United States. Roughly one in four strokes is recurrent. For patients admitted to the hospital with a stroke, medication management both during their stay and upon discharge is crucial to preventing these recurrences and promoting positive long term outcomes.

Methods: Pharmacy driven intervention will be founded in active flagging of admitted stroke patients through computer database. Pharmacists will actively perform a standardized quality assurance check based on study endpoints throughout patient hospital stay. Primary endpoints: percent of patients with ischemic stroke or TIA who receive antithrombotic therapy by end of hospital day two, percent of non-ambulatory patients with ischemic stroke or hemorrhagic stroke who receive DVT prophylaxis by end of hospital day two, percent of ischemic stroke or TIA patients with LDL > 100, or LDL not measured, or on cholesterol-reducer prior to admission, who are discharged on statin medication, percent of patients with ischemic stroke or TIA prescribed antithrombotic therapy at discharge, percent of patients with ischemic stroke or TIA with a-fib/flutter who are discharged on anticoagulation therapy. Secondary endpoints: percent of stroke or TIA patients or their caregivers who were given education during hospital stay about stroke-related warning signs, risk factors and medications.
All patients with ischemic, hemorrhagic stroke or TIA admitted to hospital will be included in the study. 4 months of pre and post intervention data will be collected from the Quality Department for included patients. Percentage of patients who meet the defined study endpoints will be calculated for both control and intervention data sets. Statistical analyses of each data endpoint will be conducted through calculated p-value and 95% confidence intervals.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-102

Poster Title: Implementation of a pharmacy driven basal-bolus insulin protocol within a community hospital setting

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Purpose: The ADA and the AACE recognize that glycemic outcomes are optimal in patients managed on a basal-bolus insulin regimen. In hospitalized patients, glycemic outcomes are related to the length of hospital stay and costs associated with hypoglycemic or hyperglycemic events. Since pharmacists can make an impact on related outcomes, the objective of this research is to determine the efficacy of a pharmacy driven basal-bolus protocol as compared to non-protocol managed patients. Secondary objectives are to determine the cost justification of the protocol in relation to length of hospital stay and decrease in the cost of hyperglycemic and hypoglycemic events.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients ordered sliding scale insulin with two or more blood glucose readings less than 70 mg/dL and/or greater than 200 mg/dL in 24 hours will be identified via pharmacosurveillance software. Pharmacists will then intervene by contacting providers and recommending those identified patients be placed on an insulin by pharmacy basal-bolus protocol. Additionally, the protocol can be ordered by a provider for any non-critically ill hospitalized patient. The protocol will be developed by the pharmacy department and approved by the Pharmacy & Therapeutics Committee and the Endocrine Committee of the Hallmark Health System. It will guide pharmacists in determining the optimal basal-bolus regimen and adjusting the regimen based on glucose readings. From January 2017 through April 2017, blood glucose readings during hospital stay will be collected for patients ordered the protocol and for patients not ordered the protocol. A head to head comparison of the average blood glucose readings between the two groups will be analyzed using the student's t-test. The primary endpoint is to conclude if blood glucose outcomes were optimally controlled (between 140-200 mg/dL) in the protocol

group versus optimally controlled in the non-protocol group. As secondary endpoints, cost justification of the protocol will be determined by comparing hyperglycemic and hypoglycemic events and length of stay for patients in each group, respectively.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 11-103

Poster Title: Impact of post-operative intravenous acetaminophen on opioid consumption within twenty-four hours after orthopedic surgery in a community hospital setting: A retrospective cohort study

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Purpose: Multi-modal analgesia is becoming increasingly important for the treatment of post-operative pain. The Pharmacy and Therapeutics Committee of a two-community hospital system approved intravenous (IV) acetaminophen for a one-time dose within 24 hours post-operation. This was mainly due to the high cost of the medication which is only available as a brand name product. The primary objective of this study is to evaluate the effects of IV acetaminophen in orthopedic surgery patients on opioid use, while the secondary objective is to evaluate its effect on pain control.

Methods: This is a retrospective cohort study that will first be reviewed by the Institutional Review Board. The study population will consist of individuals who underwent a total hip replacement or a total or partial knee replacement, who are at least 18 years old, and who have the ability to use the pain scales to measure pain. Subjects in the intervention group will have had their surgery between March 1, 2016 and September 1, 2016. The control subjects will have had their surgery between April 9, 2012 and October 9, 2012, which is before IV acetaminophen was put on the formulary. The time to first narcotic and total opioid use within 24 hours as documented in the medication administration record will be collected. The secondary objective will be achieved by looking at patient-reported pain scores documented in the electronic medical records. An Excel spreadsheet will be created with the subjects' demographic information as well as the data for the endpoints. Both the primary and the secondary endpoints will be compared for both groups using a Student's t-test. To measure the total opioid consumption, the mean morphine equivalent (ME) dose will be calculated for each

subject. Descriptive characteristics will be used for baseline demographic information in the form of means.

Results: n/a

Conclusion: n/a

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-104

Poster Title: Impact of protocol for the management of acute alcohol withdrawal syndrome (AAWS) in the intensive care units of a community based health care system

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Purpose: Many cases of severe alcohol withdrawal syndrome are refractory to benzodiazepines. Thus, the demand for an appropriate protocol to manage such cases is on the rise. This study will evaluate a new alcohol detoxification protocol using phenobarbital as a synergistic or additive therapy to the intravenous push of benzodiazepines for patients not responding to benzodiazepine monotherapy. The objectives of this study is to increase ventilator free days, and decrease ICU length of stay, use of benzodiazepines, and mortality rate related to AAWS

Methods: This study is awaiting approval through the institutional review board. Physicians will utilize the new alcohol detoxification protocol when managing severe cases of alcohol detoxification resistant to benzodiazepines. Physicians will evaluate if a patient is an appropriate candidate for the new alcohol detoxification protocol using protocol parameters and available patient data. This protocol will start the patients on IV bolus lorazepam and assess their response using RASS scale. If they are still not responding, patients will then be started on IV bolus phenobarbital. Dexmedetomidine, clonidine, or propofol can be used as supportive therapy due to their anxiolytic properties, and may promote weaning patients from mechanical ventilation. The primary outcome of this study will compare the number of ventilator free days for 90 days in 2017 to pre protocol implementation of 90 days in 2016. Moreover, the secondary outcomes including ICU length of stay, use of benzodiazepine, and mortality rate will be compared in the similar manner; for 90 days in 2017 to pre protocol implementation of 90 days in 2016. This study will utilize a prospective chart review to assess the number of ventilator free days. For continuous variables, a two-sample t-test will be used. Likewise, for categorical variables, a chi-squared test will be used

Results: n/a

Conclusion: n/a

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-105

Poster Title: Impact of pharmacist medication assessment and intervention on reducing falls in a community hospital health system

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Purpose: Falls in hospitalized patients has received a lot of attention in recent years. Each year between 700,000 and 1,000,000 people in the United States fall in the hospital. A fall may result in an injury that can add to overall healthcare costs. Several medications are associated with an increased fall risk. Fall prevention through medication management via pharmacists' interventions has consistently been shown to reduce risk of falls. This project is aiming to implement an assessment tool and an intervention guide to be used by a pharmacist to manage patient medications that can contribute to falls on the medical floors

Methods: Prospective review chart study for the period of 3 months pre and post implementation of the pharmacist assessment tool and intervention guide. The primary endpoint is reducing the number of patients that are on multiple medications that are linked to falls. The secondary endpoint is to reduce the number of falls on medical floors .For the primary end point, the data will be collected based on the number of patients on multiple medications that are potential of falls and had a fall event at the hospital. This continuous variable endpoint will be evaluated using student t-test while the categorical data for the secondary endpoint will be using chi square with level of significant of
alpha = 0.05. The study will include patients who had a fall event on the medical floors during the study period. Patients in emergency department or labor & delivery unit will be excluded

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-106

Poster Title: Development and validation of an asthma action plan assessment tool (AAPAT) for use in pediatric asthma

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Purpose: The purpose of this project is to develop a validated Asthma Action Plan Assessment Tool that evaluates the caregivers' perception of their child's health in relation to his or her asthma treatment and control. Asthma is one of the most common chronic conditions seen in children today, affecting about 6.3 million lives. Despite advances in care and the use of asthma action plans, asthma-related emergency room visits and hospitalizations have not decreased. One possible component contributing to the uncontrolled status of pediatric asthma is the perceived understanding of the patient and caregiver about the control and management of asthma symptoms.

Methods: The Asthma Action Plan Assessment Tool (AAPAT) was designed to target specific aspects of the Asthma Action Plan where caregivers may find difficulty in understanding the information. The AAPAT consists of questions that assess the understanding about asthma and management of symptoms, and were developed to recognize what areas require emphasis and counseling. Resources used in the development of the questions included Guidelines for Diagnosis and Management of Asthma as well as literature researching poor asthma control. The assessment tool will be distributed to recognized asthma specialists for feedback by September 1, 2016.
Feedback from the identified asthma specialists will be requested by November 2016. From the feedback of these healthcare providers, we hope to obtain validation for the assessment tool and its viability for use in patient clinical care.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-107

Poster Title: Improving access to care: Evaluation of clinical pharmacist-led comprehensive medication reconciliations in patients with mental health illnesses in a primary care setting

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Purpose: At Greater Lawrence Family Health Center (GLFHC), a federally-qualified, primary care clinic in Massachusetts, patient access to outside psychiatrics and mental health specialists is limited. GLFHC's Behavioral Health Initiative is currently working to improve and integrate access to mental healthcare across the organization. One aspect of this initiative is clinical pharmacist-led medication reconciliation as a mainstay of the clinic's mental healthcare model. This purpose of this study is to (1) assess and evaluate the skills and contributions of the clinical pharmacists in the management of patients with mental illnesses and (2) to identify potential areas requiring additional training or support.

Methods: This study will be submitted to the Institutional Review Board for approval. Currently, GLFHC clinical pharmacists (CPs) work side-by-side with clinicians to provide comprehensive medication management for patients with a variety of chronic conditions, including psychiatric disorders. Patients with a mental illness receiving medication therapy who have been referred to a CP for comprehensive medication reconciliation will be included. Following the current CP referral process, patients can be referred to a CP for comprehensive medication reconciliation by any GLFHC clinician. Patients will be scheduled with a CP for an initial 60-minute visit. The CP will review patient demographics, history of present illness, psychiatric/medical history, past and current medications, allergies, and family/social history. CPs will also compile a prescription refill history to assess adherence. Patients' drug therapy problems and any interventions performed by the CP will be noted. CPs will document summaries of their visits in the patients' charts, which will be reviewed. All data will be recorded without patient identifiers and maintained confidentially. All CPs involved will receive additional CE/webinar training. Clinic staff and clinicians will receive refresher-education on the clinical pharmacy services offered at

the clinic and the benefits for patients, especially those with psychiatric and comorbid conditions.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-108

Poster Title: Opioid prescribing: Can we write for less? A retrospective analysis of opioid prescription requests for acute pain in a multisite, ambulatory care organization.

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Purpose: On March 14, 2016, the Commonwealth of Massachusetts passed a law to amend MGL 94C Section 18 which states that initial prescriptions for opioids may not exceed more than a seven day supply. Studies have shown approximately seventy percent of patients prescribed an opioid had pills left over. Furthermore, on average, the days' supply remaining on opioids that were returned to a 'take-back' program was 3.3 days. The objective of this study is to determine the request rate for additional opioid prescriptions compared to the original prescribed days' supply. This is an outcome that has not been studied.

Methods: The Institutional Review Board at MCPHS University has approved this study. Atrius Health patients who received an initial prescription for a short-acting oral opioid indicated for acute pain management that was a fourteen-day supply or less between May 1, 2016 and October 1, 2016 will be included in this study. A retrospective chart review will be completed by the primary investigator. Patients will be excluded if they are receiving palliative care, have a diagnosis of cancer, chronic prescription for opioids, a second separate pain episode within 30 days, if we cannot determine if the prescription is the first or second prescription, or if the prescription was prescribed for a condition other than acute pain. The primary outcome will be to determine the percentage of additional patient short-acting opioid prescription requests after an initial prescription for acute pain management was prescribed. We will also aim to determine if certain patient characteristics such as; substance/alcohol abuse, documented history of smoking and age have an effect on the request for additional opioid prescriptions.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-109

Poster Title: Impact of a pharmacist-driven education and physicians' reassessment of antibiotic usage after 48 hours at a community teaching hospital

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Purpose: The Joint Commission recently approved standards for antimicrobial stewardship consisting of seven core elements, effective January 1, 2017. New data published in August 2016 showed that only 39.2 percent of hospitals currently implement all seven core elements. One of these elements is "action," described as an evaluation of ongoing treatment need after a set period of time. The purpose of this study is to assess if pharmacist-led education and providing a self-assessment tool for the physician after 48 hours will have an impact on antibiotic duration and improve antibiotic usage, thereby helping optimize efforts to meet Joint Commission requirements.

Methods: Using a pre-post design, patients' charts will be reviewed retrospectively and antibiotic usage will be compared before and after the implementation of a pharmacist-driven program. This program will consist of an initial education phase for prescribers, pharmacists and nurses on the practice of routinely reassessing antibiotic therapy. Then, each time a targeted broad spectrum antibiotic order has been active for over 48 hours, a standard pre-approved note will be placed in a patient's chart and the assigned provider will be paged. Targeted antibiotics include cefepime, ertapenem, meropenem, piperacillin/tazobactam, and tigecycline. The chart note will contain a self-assessment questionnaire prompting the prescriber to re-assess the patient's antibiotic therapy. Data collected will include baseline patient characteristics, antimicrobial regimen prescribed, indication for therapy, duration of therapy, and culture and sensitivity results. The primary outcome is the difference in the median duration of therapy for the targeted antibiotics. Secondary outcomes include differences in median length of stay, median durations of intravenous versus oral therapy, and

percentage of antibiotics de-escalated within 48 hours after intervention. At least 50 patients will be analyzed in each group. This study proposal will be submitted to the Institutional Review Board for approval and all findings will be presented to the Antimicrobial Stewardship Committee and the Pharmacy and Therapeutics Committee.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-110

Poster Title: Effects of pharmacist-driven interventions on dosing selected anticoagulants

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Purpose: Several anticoagulants have manufacturer guidelines for dose recommendations based on renal function, weight, indication, and age. The potential for confusion while dosing is a major concern with these drugs. Because appropriate dosing is critical in anticoagulants, and numerous cases of bleeding with incorrect dosing have been reported at our institution, a study will be performed to evaluate appropriateness of dosing for patients receiving the anticoagulants. The aim of this study is to evaluate the effects of pharmacist-driven dosing interventions for selected anticoagulants that require dosing adjustments.

Methods: This study is a prospective cohort design, with an analysis comparing the data to a retrospective review. Medications included in the study are the direct oral anticoagulants (DOACs) on formulary and enoxaparin. Evaluation of appropriate dosing will be based on drug manufacturers' dosing guidelines. Initially, a pharmacist will conduct a two-month retrospective drug utilization review using hospitalized patients who have received at least one dose of the anticoagulants. Next, during a two-month period, the pharmacist will conduct the prospective interventional phase by evaluating all active orders for the included medications daily and consider them for dosing appropriateness. If dosing adjustments are recommended, the pharmacist will contact the prescriber to suggest a drug or dose change. Data will be collected from the electronic medical record, including hemoglobin, serum creatinine, age, gender, height, weight, length of stay, physicians' notes regarding indication, dose, frequency, use of interacting drugs, and transfusions received. The analysis will compare the interventional phase to the historical data to evaluate the study outcomes. The primary outcome will tabulate the difference in the number of patient-days with inappropriately dosed medication therapy. The secondary outcomes will tabulate the number of prescriber-accepted interventions, the rates of major bleeding, and median length of stay. This study will be submitted to the hospital's

institutional review board for approval, and will be presented to the hospital's pharmacy and therapeutics committee.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-111

Poster Title: Utilization of Concomitant Adjunctive Therapies to Opioid Regimens for the Management of Chronic Pain in an Ambulatory Care Setting

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Purpose: The 2016 Centers for Disease Control and Prevention Guidelines for Prescribing Opioids for Chronic Pain recommends that nonpharmacologic and nonopioid pain medications should be used concurrently when opioid therapy is necessary for chronic pain management. Currently, there is limited data reflecting the prevalence of adjunctive therapies used in conjunction with opioid therapies in patients with chronic pain in an ambulatory care setting. The objective of this study is to report the prevalence and patterns of nonopioid and nonpharmacologic pain management therapies used concurrently with opioids for chronic pain in an ambulatory care setting.

Methods: This observational study will be conducted at five federally qualified community health centers and one Program of All-Inclusive Care for the Elderly program. Eligible patients will be identified through electronic medical record (EMR) queries with the following criteria: eighteen years of age or older, currently on chronic opioid therapy (defined as continuous opioid therapy for at least three months), active patient status at a health center (defined as seeing a provider at least twice between May 1, 2016 to October 1, 2016), and receive their opioid prescriptions only from providers employed at one of the study sites. Once eligible patients are identified, the EMR will be reviewed for active prescriptions of nonopioid medications used for pain management. Data on nonpharmacologic treatments, as well as over-the-counter nonopioid medications that may not be documented in the EMR, will be collected via standardized surveys, phone calls and patient interviews. Finally, each patient's total daily morphine milligram equivalents will be calculated and analyzed to identify any trends in total daily morphine milligram equivalents, based on concurrent use of nonpharmacologic and nonopoid therapies. Institutional Review Board approval will be obtained at all sites.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-112

Poster Title: Impact of pharmacist-enhanced antimicrobial stewardship on the utilization of two unrestricted antimicrobials and the incidence of clostridium difficile infection in a community teaching hospital

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Purpose: Antibiotic stewardship program (ASP) is a multidisciplinary collaboration that requires coordinated interventions to improve patient outcomes and reduce adverse events including clostridium difficile infection (CDI), our institution currently incorporates all the elements of antimicrobial stewardship, primarily restriction and preauthorization. However, recent studies have linked CDI with the utilization of certain cephalosporines and flouroquinolones antibiotic, ceftriaxone and levofloxacin are not infectious disease restricted antimicrobials in our institution. The objective of this study is to evaluate interventions by the pharmacists on the reduction of the utilization of two unrestricted antimicrobials (levofloxacin, ceftriaxone) and the effect on the incidence of CDIs.

Methods: The study will be submitted to Institutional Review Board for approval. Data will be collected retrospectively from electronic medical records on all patients who received either levofloxacin or ceftriaxone for a period of three months. Data will include patient demographics, indications, number of doses, and duration of therapy. The study will also include a three months prospective period. A pharmacy resident will evaluate antimicrobial therapy and intervene when therapy is not aligned with treatment guidelines. Intervention will include calling physician to de-escalate (discontinue antimicrobial, streamline therapy), renal dosing, IV to PO conversion and adherence to duration of therapy. During the prospective period, data collected will be microbiology lab results, percentage of antibiotic prescriptions not complaint with guidelines, and pharmacist interventions. Outcome measures will be lengths of hospital stay, 30-day readmission rate, and the incidence of hospital acquired CDI. Results will be compared and presented to the Pharmacy and Therapeutics Committee.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-113

Poster Title: Evaluation of the use of unfractionated heparin versus bivalirudin for adjunctive antithrombotic therapy in patients undergoing percutaneous coronary intervention

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Purpose: Patients undergoing percutaneous coronary intervention (PCI) require adjunctive anticoagulant therapy during the procedure. The anticoagulants recommended for use during PCI in the 2011 ACCF/AHA/SCAI guideline include unfractionated heparin (UFH), bivalirudin, enoxaparin or fondaparinux. Of these drugs, UFH and bivalirudin are the two most commonly used at our institution. The objective of this study is to examine the prescribing patterns and use of anticoagulants in patients undergoing PCI and to identify criteria that would help guide anticoagulant use in order to optimize efficacy, safety and resource utilization.

Methods: This study will be submitted to the Institutional Review Board for approval. The hospital's electronic medical record will be used to identify patients who underwent PCI over a three-month period. The use of UFH and bivalirudin will be retrospectively evaluated and prescribing patterns will be analyzed. Data collected will include demographics, anticoagulant used, drug dosing, laboratory parameters and length of hospital stay. The clinical outcomes that will be evaluated will include the incidence of ischemic events, revascularization, mortality and bleeding. Data will be analyzed to compare clinical outcomes associated with each drug, with the intention to distinguish patients that may benefit from using one drug over the other. The results of this study will be presented to the Pharmacy and Therapeutics committee.

Results: NA

Conclusion: NA

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-114

Poster Title: Acid suppression for stress ulcer prophylaxis: impact of a pharmacy monitor

Primary Author: Awatif Hafiz, Steward St. Elizabeth's Medical Center of Boston, Inc., MA; **Email:** awatifhafiz@yahoo.com

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Purpose: Risk factors such as mechanical ventilation and coagulopathy have been associated with stress ulceration. Current stress ulcer prophylaxis (SUP) guidelines are outdated and are due to be updated imminently. Acid-suppression for SUP is recommended and proton pump inhibitors (PPI) are widely prescribed. Meanwhile, there are controversies such as incidence of stress ulcers, choice of agent and PPI-related adverse events. Thus, the objective of this project is to evaluate prescribing patterns of SUP agents at our institution and to identify the impact of a pharmacy monitor on their use.

Methods: The study will be submitted to Institutional Review Board for approval. There will be a retrospective phase followed by a prospective phase, each with a duration of 8 weeks. During the retrospective phase, from the 1st August to 30th September, the following data shall be collected using electronic medical records for inpatients treated for SUP: patient demographics, indication, medication, route, class, dose and duration. Pharmacological agents to be targeted will include proton pump inhibitors and histamine receptor blockers. Next, in the prospective phase the pharmacy resident will print a daily report of SUP agents hospital-wide. This phase will be conducted from 1st November to 31st December. Recommendations will be made if needed based on indication, duration etc. according to available literature guidelines. The same data will be collected in the prospective phase and compared to that of the retrospective phase. Primary outcomes will be based on the net effect of the pharmacist's interventions: 1) appropriate indication for SUP; and 2) timely discontinuation of prophylactic agent. Secondary outcomes will include conversion from intravenous to oral route and accurate dosing regimen. The results will be presented to the Pharmacy and Therapeutics Committee.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-115

Poster Title: Assessment of the impact of quality improvement interventions on the prescribing patterns of venous thromboembolism prophylaxis at one large, tertiary care, academic medical center

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Additional Author (s):
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Purpose: Venous thromboembolism (VTE) affects over 350,000 patients annually, contributing to increased morbidity, mortality, and hospital days. National accreditation organizations are incentivizing institutions to develop best practices to ensure patients are receiving appropriate VTE prophylaxis while hospitalized. Prior literature conveys that active interventions (e.g. direct education, development of standardized order sets) may improve rates of appropriate VTE prophylaxis. The objective of this study is to assess the current prescribing patterns for VTE prophylaxis at our institution and evaluate the impact of active quality improvement interventions on prescribing practices.

Methods: This is a retrospective chart review of adult patients admitted to medical and surgical services at our institution from November 2016 to January 2017. Patients with a primary diagnosis of VTE will be excluded. Initial evaluation of prescribing patterns will be utilized to identify challenges with prescribing VTE prophylaxis. Active monitoring and education will be provided by pharmacy staff to overcome these challenges for a predetermined period of time. Following the intervention period, VTE prescribing will be further evaluated. The primary endpoint is the change in rate of appropriate VTE prophylaxis prescribed for at-risk patients (as defined by the American College of Chest Physicians guidelines) after implementation of active intervention(s). Secondary endpoints include the assessment of appropriate dosing of VTE prophylaxis and barriers to best practices in an academic medical center without computerized order entry capabilities.

Results: Research in progress.

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-116

Poster Title: Assessment of patient engagement and satisfaction in community pharmacy to increase pneumococcal vaccination rates in high risk patients

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Purpose: Studies have evaluated efficacy of pharmacist-driven education on pneumococcal vaccination rates in the hospital. However, in the community, studies have only looked at increasing pneumococcal vaccination rates in those ≥ 65 years. This research project will provide pharmacist intervention to high risk patients and those ≥ 65 years. We will incorporate the use of the Massachusetts Immunization Information System (MIIS) in workflow. MIIS is an important tool as it provides complete, accurate, real-time immunization history for residents of Massachusetts. This research project will increase utilization of MIIS to improve pharmacists' understanding of patients' vaccination history and prevent unnecessary vaccinations.

Methods: Patient Recruitment: During data review and at the time of flu shot administration, pharmacists will review patient profiles to assess if the patient is a candidate for pneumococcal vaccination. If deemed eligible for pneumococcal vaccination, the pharmacist will place a consultation on the prescription to educate patients on pneumococcal vaccination requirements upon pick-up.
Pharmacist Intervention: First inform the patient and obtain patient consent . Then provide patient questionnaire and education on current ACIP recommendations. Immunization history will be obtained via immunization registry to confirm patients' pneumococcal vaccination history. If patient is not an accurate historian at time of intervention and records are not available on the immunization registry, vaccination record will be obtained from PCP. The questionnaire and educational documents will be reviewed with the patient to provide further education. Patients will then be offered the opportunity to receive the vaccination in the community pharmacy. For patients who agree to vaccination during pharmacist intervention,

provide same day pneumococcal vaccination if possible. If patients decline the vaccination at time of intervention, the pharmacist will assess barriers to receiving vaccine and obtain consent to provide follow-up call to patient.
Technician Engagement: Technicians will be required to complete an ACPE accredited immunization CE. Learning objectives and exam questions will be reviewed with a pharmacist. Technicians will take a pre/post-survey to assess effectiveness of technician teaching/engagement.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-117

Poster Title: Implementing a collaborative partnership model to assist in the transitions of care for patients receiving oral chemotherapy

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Purpose: Oral chemotherapy patients often take medications with increased toxicities and complex dosing, requiring significant education and patient support. These complicated medications are often specialty pharmacy restricted and require comprehensive education. An innovative outpatient oral oncology program will provide specialized pharmacy services utilizing multiple platforms and tools to assist the oral oncology patient in their transitions of care through a collaborative partnership between a local health system in Boston and a local specialty pharmacy of a large chain pharmacy.

Methods: Patients receiving select oral chemotherapy will be referred by their health-system oncology team to participate in program services provided by the local community pharmacy. Upon establishing a patient relationship and obtaining patient consent, pharmacy financial experts will conduct a benefits review to proactively identify required pre-authorizations and financial assistance needs. Pharmacist prospective drug utilization reviews will compare the chemotherapy order to the patient's medication profile within and outside of the local specialty pharmacy network. An appointment will be made with the patient and their caregiver to provide for: Comprehensive medication teaching, adherence counseling, and tools to assist with medication and disease management. Follow-up appointments will be created during the patient's cycle at 5 to 7 days post oral chemotherapy initiation, and monthly thereafter for monitoring of adherence and adverse related events. Documentation of communications will be made and sent to the provider for input in the patient's Online Medical Record. Patients will be evaluated through adherence with indirect measures and standardized toxicity assessment tools. Patient satisfaction will be measured through the administration of surveys for

continuous quality improvement measures. Outcomes will be assessed through descriptive methods and correlative statistics will be used to evaluate patient satisfaction and assessments. The research question will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-118

Poster Title: Use of Daptomycin in MRSA Bacteremic Patients Who Failed Vancomycin Treatment: a Retrospective Study

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Purpose: To evaluate the utilization of daptomycin in MRSA bacteremic patients who have failed vancomycin treatments at a community teaching institution.

Methods: This single center, retrospective observational study of adult patients receiving daptomycin secondary to persistent MRSA bacteremia was approved by the Institutional Review Board. Failure of vancomycin treatment will be defined as persistently positive blood culture(s) despite receiving more than 72 hours of vancomycin or vancomycin MIC of 2 mcg/ml or greater. A list of patients who received daptomycin from January 2009 to September 2016 will be reviewed. Patients with bacteremia from presumed pneumonia or MRSA bacteremia within 30 days of admission will be excluded. Daptomycin dose will be evaluated for appropriateness based upon patient weight and renal function. Duration of bacteremia will be evaluated, including whether source control was achieved. Creatinine phosphokinase (CPK) levels drawn during daptomycin therapy will be assessed to evaluate safety. Hospital length of stay and patient disposition will be collected for each patient. Data will be presented with descriptive statistics.

Results: Data collection in process

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 11-119

Poster Title: Evaluation of the dosing appropriateness of erythropoietin stimulating agents (ESAs)

Primary Author: Chantale Daifi, Beaumont Health System - Troy, MI; **Email:** chantale.daifi@beaumont.org

Additional Author (s):

Purpose: Erythropoietin stimulating agents stimulate the bone marrow to produce red blood cells. Inappropriate dosing of ESAs can lead to adverse events such as myocardial infarction, stroke, thromboembolism, and death. One of the FDA approved indications of ESAs is anemia of chronic kidney disease (CKD). The formulary ESA at Beaumont Health System is darbepoetin. The purpose of this study is to evaluate the appropriateness of darbepoetin dosing in CKD patients within the health system.

Methods: An institutional review board (IRB) approved retrospective chart review was conducted of patients prescribed darbepoetin for the indication of anemia in CKD. Patients were included if they were 18 years or older and admitted to Beaumont Health between July 1st, 2014 and June 30th, 2016. Patients with active chemotherapy orders, pregnant patients, and patients taking zidovudine for human immunodeficiency virus (HIV) were excluded. The primary endpoint is to evaluate the appropriateness of initial weight-based ESA dosing in CKD patients with anemia. Data collected included patient characteristics, darbepoetin dosing, date and time of administration and discontinuation, number of doses administered and corresponding lab values including hemoglobin, ferritin, transferrin saturation, and blood pressure values. Data was collected at baseline and up to 24 hours after each administration of darbepoetin. Appropriate statistical methods were used for data analysis.

Results: To be presented at Midyear Clinical Meeting in December 2016.

Conclusion: To be presented at Midyear Clinical Meeting in December 2016.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-120

Poster Title: Assessment of an educational intervention and its impact on medical resident knowledge and comfort level with urine drug testing

Primary Author: Whitney Aultman, Beaumont Health System, Royal Oak Campus, MI; **Email:** whitney.aultman@beaumont.org

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Purpose: Increasing concern surrounding the opioid abuse epidemic has led the Centers for Disease Control and Prevention (CDC) to release recommendations for safe opioid prescribing. These guidelines recommend that clinicians utilize urine drug tests (UDTs) before starting opioid therapy and at least annually thereafter to assess for prescribed medications or illicit substances. However, UDT's can be difficult to interpret and subject to misinterpretation as other medications taken by patients may cause false positive results. The purpose of this study is to assess the impact of a pharmacist educational intervention on medical resident's knowledge and comfort in UDT interpretation in clinical practice.

Methods: This prospective educational intervention study will utilize survey responses to assess the impact of an educational intervention on medical resident knowledge and comfort level with UDTs. All internal medicine (IM) and internal medicine/pediatric residents currently training at our facility will be eligible for inclusion. Residents will be offered a survey consisting of 15 multiple choice questions assessing their knowledge and comfort with interpreting UDTs before, immediately following, and two months after attending an educational lecture given by a pharmacist. The 20 minute lecture will be given monthly for four consecutive months to allow all medical residents to be included. Topics covered will include: types of UDTs, initial and confirmatory testing, sample adulteration, dilution and substitution, and potential causes of false positives in UDTs screening for controlled substances. The primary outcome will assess the impact of pharmacist UDT education on the medical resident's correct interpretation of UDTs and comfort in UDT interpretation. Secondary outcomes include: composite impact of pharmacist education on medical resident knowledge and comfort in UDT interpretation, level

of knowledge retention post pharmacist education, and differences in comfort and knowledge of UDTs by residency year. Descriptive statistics will be utilized to analyze data. Exploratory analysis will be conducted to determine any associations within collected data.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-121

Poster Title: Evaluation of the use of four-factor human prothrombin complex concentrate in the reversal of acute major bleeding

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Additional Author (s):
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Purpose: Acute major bleeding is a life threatening event. Safe and effective treatment is crucial to survival and quality of life post bleed. Four-factor human prothrombin complex concentrate (PCC) or Kcentra is the only available four-factor PCC and is approved for urgent reversal of warfarin. Our institution currently uses four-factor PCC for the reversal of warfarin and all direct oral acting anticoagulants (DOAC) except for dabigatran, which now has its own specific reversal agent. The goal of this study is to evaluate the safety and efficacy of four-factor PCC in both warfarin and DOAC reversal.

Methods: This medication use evaluation is in the process of being submitted to the Institutional Review Board for approval. This study will be conducted as a retrospective chart review. Patients will be included if they had been administered four-factor PCC since January 1st, 2015 for the reversal of either warfarin or a DOAC and were 18 to 89 years of age at the time of administration. Chart review will be conducted using the electronic medical record and patients will be identified using medical record number. Data collection variables will be stored in a de-identified excel spreadsheet. Indication for use, location of administration within the hospital, and four-factor PCC dose given will be recorded and evaluated. Kcentra does contain heparin; therefore proper patient selection is crucial. Inappropriate patient selection can lead to adverse drug effects, so existence of contraindications and precautions will be evaluated. Monitoring of four-factor PCC will be assessed by incidence of adverse effects, which will include presence of any thrombotic events and hypersensitivity reactions. Monitoring will also include time to first international normalized ratio (INR) post-treatment with four-factor PCC. Safety and efficacy will be evaluated by achievement of hemostasis (measured by vital signs

and hemoglobin), time to an INR less than or equal to 1.3, and survival at discharge. Potential benefits include improving the current policy in place for internal improvement.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-122

Poster Title: Characterization of Major and Clinically Relevant Bleeds Following Alteplase Administration for Pulmonary Embolism (PE)

Primary Author: Nouran Salem, Beaumont Hospital - Royal Oak, MI; **Email:** nouran.salem@beaumont.org

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Purpose: Systemic and catheter-directed thrombolytic therapy with alteplase facilitates resolution of acute pulmonary embolism (PE) and associated complications. Alteplase use has increased at our health system for treatment of submassive PE due to evolving data to support its use. Limited data exists regarding specific patient characteristics associated with increased bleed risk following alteplase administration. The objective of this study is to evaluate patients who bled after receipt of alteplase for acute PE in order to characterize the types of bleeding events and management strategies, identify patient characteristics that increase bleed risks, and report patient outcomes.

Methods: This is a retrospective chart review of patients who bled after receiving alteplase for acute PE treatment. Patients treated with alteplase between November 1, 2012 and July 31, 2016 at three institutions within one Health System will be considered for inclusion. Patients will be identified using electronic prescription (ERx) codes for alteplase. A retrospective chart review will be performed to confirm patients received alteplase for PE and experienced major or clinically relevant bleeding. The International Society on Thrombosis and Haemostasis (ISTH) major bleed criteria will be used (i.e. clinically overt bleeding plus >2 g/dL hemoglobin drop, clinically overt bleeding requiring > 2 units of packed red blood cells, critical site involvement, or fatal bleed). Patients will be excluded if oral anticoagulation administration preceded the bleed event. Those who meet criteria will undergo a retrospective chart review by utilizing a systematic data collection tool. Data collection will include patient demographics, co-morbidities, baseline laboratory parameters, vital signs, PE severity, alteplase regimen, concurrent and subsequent anticoagulant administration, diagnostic tests for bleed diagnosis, bleed severity, time to bleed from alteplase administration, and bleed management strategies.

Outcomes will include bleed location/type, hospital and ICU lengths of stay, recurrent thromboembolic events, re-admissions within 30 days (stratified for thromboembolic events and bleeds), in-hospital and 30-day mortality, and patient disposition upon discharge. Descriptive statistics will be used to analyze and report the data.

Results: Results will be presented at the conference.

Conclusion: Conclusion will be presented at the conference.

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 11-123

Poster Title: Utilization of data analytics for investigating controlled substance diversion to support a Code N team at a large academic medical center

Primary Author: Hoan Hoang, Beaumont Hospital - Royal Oak, MI; **Email:** hikaru.hoang@gmail.com

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Purpose: The opioid epidemic continues to significantly burden the public health landscape. Controlled substance diversion by healthcare workers contributes to this epidemic as a source for personal use and illegal sales to the public. Patient safety may also be compromised under an addicted worker's care. Health-system pharmacies should develop standardized practices for reviewing controlled substance documentation. A proactive approach utilizing data analytics to detect potential diversion ensures compliance with regulatory requirements and minimizes impact to patients and caregivers. The goal of this project is to standardize the pharmacy-driven investigation and reporting of diversion as part of the multidisciplinary Code N team.

Methods: The project will be submitted to the Institutional Review Board for approval. Current process of pharmacy-driven investigation of controlled substance diversion will be evaluated by direct observation. Data such as average number of in-depth investigations per month and the time required to carry out the investigation will be collected using surveillance software integrated with the automatic dispensing cabinets. Standardization of the current process will occur after the initial evaluation. Finally, a method for utilizing pharmacy-driven reporting will be developed to support a multidisciplinary Code N team.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-124

Poster Title: Effect of induction immunosuppression selection on three year opportunistic infections and safety outcomes in adult renal transplant recipients

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Purpose: The fundamental purpose of this study is to assess the effect of induction immunosuppression selection on the risk of opportunistic infections and safety outcomes in renal transplant recipients within three years of transplant. Studies completed at other transplant centers have limited applicability to our institution due to institution-specific protocols. An investigation to examine the differences in outcomes between these induction agents has not been completed at our institution.

Methods: This study will be submitted to the Institutional Review Board for approval. A list of all patients who received a renal transplant at our institution between January 2011 and December 2013 will be obtained from the transplant clinic. Patients who received induction immunosuppression with basiliximab, alemtuzumab, or rabbit anti-thymocyte globulin will be included. Patients who were younger than 18 years of age at the time of transplant, received simultaneous liver-kidney transplant, or required pre-transplant desensitization will be excluded. Electronic medical records will be reviewed to assess eligibility criteria and to collect data. A systematic data collection form will be used to collect recipient demographics, available donor demographics, immunologic risk factors, induction immunosuppressant received, opportunistic infection prophylaxis and treatment, renal function, biopsy results, and treatment of rejection. The primary endpoint is the incidence of opportunistic infection(s) during the identified study period. Secondary endpoints include incidence of graft survival, patient survival, and re-hospitalization due to all causes and due to stratified causes (acute kidney injury, chronic kidney disease, infectious disease, gastrointestinal complications, and surgical-related complications). Continuous data will be analyzed using a Student's t-test. Regression

analyses will be performed to assess the impact of treatments on outcomes, controlling for patient characteristics.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-125

Poster Title: Vancomycin for the treatment of coagulase-negative staphylococcus bacteremia: Does MIC matter?

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Purpose: Staphylococcus aureus and coagulase-negative staphylococcus (CoNS) have different vancomycin MIC susceptibility breakpoints of 2mcg/mL and 4mcg/mL, respectively, as defined by the Clinical and Laboratory Standards Institute (CLSI). An increased risk of treatment failure with vancomycin has been reported in S. aureus infections with higher MICs. This research is mostly limited to Staphylococcus aureus infections, but some physicians will extrapolate this data to CoNS infections. It is unknown, however, if CoNS species with higher vancomycin MICs impact treatment success. The objective of this study is to determine if the vancomycin MIC affects outcomes in patients with CoNS bacteremia.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a multi-center retrospective chart review of patients with coagulase-negative staphylococcus (CoNS) bacteremia admitted between January 2013 and September 2016. Patients will be identified by using vancomycin administration data and microbiology reports for positive cultures with CoNS. Eligible patients must be at least 18 years of age with a clinical diagnosis of CoNS bacteremia and have received at least five days of inpatient treatment with IV vancomycin. Patients will be excluded if their absolute neutrophil count is less than 500 cells/uL and there is no documented trough within 5 days of vancomycin initiation. The following information will be collected: patient baseline characteristics, microbiology results, and details of vancomycin therapy. The primary clinical endpoint is to compare treatment failure rates in patients with CoNS bacteremia treated with vancomycin with an MIC less than 2mcg/mL versus greater than or equal to 2mcg/mL. The secondary outcome will be to determine the incidence of nephrotoxicity in patients treated with vancomycin with an initial trough less than 15mcg/mL compared to patients with a trough greater than or equal to 15mcg/mL. Various statistical

methods will be used, including descriptive statistics for continuous variables, Students t-test for comparative statistics, and Chi-squared or Fishers exact tests for nominal data. A p-value less than 0.05 will be considered statistically significant.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-126

Poster Title: Major bleeding with apixaban in atrial fibrillation: patient characteristics, bleed management, and outcomes

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Purpose: Apixaban is one of the most recently approved oral anticoagulants for prevention of stroke and systemic embolism in patients with non-valvular atrial fibrillation. Clinical data shows that apixaban has similar efficacy and lower risk of overall major bleeding when compared to the more traditional oral anticoagulant, warfarin. The objective of this study is to assess patient characteristics, bleed management, and outcomes in patients with non-valvular atrial fibrillation who develop a major bleed while taking apixaban. The study will also identify opportunities to improve the safe use of apixaban.

Methods: The institutional review board approved this study. This is a retrospective cohort analysis of patients taking apixaban for stroke prevention in non-valvular atrial fibrillation who develop a major bleed within the timeframe of January 1, 2013 to May 31, 2016. An electronic medical record search is performed to identify patients with an apixaban prescription. From this list, patients are identified as having a hemorrhage, atrial fibrillation, and transfusion through International Classification of Diseases (ICD) codes. Patients with an ICD code for intracranial hemorrhage do not require an ICD code for transfusion. An internal adverse event reporting system is also used for patient identification. The identified patients are further evaluated for determination of major bleed (based on International Society on Thrombosis and Haemostasis criteria) and a temporal relationship to apixaban use. Patients that meet all of the above criteria will undergo a comprehensive chart review, consisting of the following data collection: patient baseline characteristics, pertinent laboratory values, apixaban and additional medication use, bleeding and stroke risk assessments, bleed management, and bleed outcomes. Bleed

outcomes include post-bleed intensive care unit and hospital length of stay, transition to hospice/comfort care/palliative care, in-hospital mortality, 30-day mortality, occurrence of thrombotic event, hospital readmission within 30 days, transition to new anticoagulation agent, and anticoagulation status at discharge and at 30 days post-discharge. Descriptive statistics will be used to present findings.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-127

Poster Title: Evaluation of the safety of patients receiving triple therapy with dual antiplatelet therapy and oral anticoagulation

Primary Author: Elizabeth Crish, Beaumont Hospital - Royal Oak, MI; **Email:** elizabeth.crish@beaumont.org

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Purpose: Triple antithrombotic therapy consisting of dual antiplatelet therapy and anticoagulation is commonly prescribed in clinical practice. However, it has been shown to increase the rate of bleeding events compared to one or two antithrombotic agents alone. There is a lack of data comparing the bleeding rate of triple antithrombotic therapy with warfarin versus triple therapy with a direct oral anticoagulant (DOAC). The primary objective of this study is to evaluate the risk of major bleeding events in patients receiving triple therapy with warfarin compared to triple therapy with a DOAC.

Methods: This is a multicenter, retrospective study. Following Institutional Review Board approval, electronic medical records will be used to identify patients who received triple therapy while in the hospital and who were discharged on triple therapy from January 1, 2013 to December 31, 2015. Patients aged 18 to 89 years old will be included. Patients will be excluded from the trial if they were on triple therapy prior to admission, had an indication for short-term anticoagulation (less than or equal to 45 days), or were pregnant on admission. The data collected will include: demographic information, indication for anticoagulation, indication for dual antiplatelet therapy, bleeding events, thrombotic events, recurrent hospitalizations, past medical history and comorbidities, anticoagulation and antiplatelet medication regimens, concomitant medications, lab values, bleeding and thrombosis risk scores, and mortality rates. The data will be analyzed using descriptive statistics and additional statistical tests, including, but not limited to, the Wilcoxon rank-sum test and t-test. The primary outcome will be the rate of major bleeding events in patients receiving triple therapy with warfarin compared to triple therapy with a direct oral anticoagulant. The secondary outcomes will include the time to bleed and the risk factors of bleeding events.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacy Law/ Regulatory/ Accreditation

Submission Type: Research-in-Progress

Session-Board Number: 11-128

Poster Title: Compliance to United States Pharmacopeia (USP) 800: A gap-analysis

Primary Author: Jaimini Patel, Beaumont Hospital - Royal Oak, MI; **Email:** jaimini.patel@beaumont.org

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Purpose: The United States Pharmacopeia (USP) recently published new standards for compounding hazardous drugs, which go into effect July 2018. Compliance to USP standards for compounding hazardous drugs is imperative for patient safety, employee health safety, and environmental protection. Michigan law (Public Act 280 of 2014) requires hospitals that compound sterile pharmaceuticals to be accredited by a national accrediting organization, approved by the Michigan Board of Pharmacy, prior to June 2017. The objective of this study is to evaluate current compliance to USP 800 at a large academic hospital, and to develop and implement an action plan for areas of non-compliance.

Methods: This study will be submitted to the Institutional Review Board for approval. In order to identify compliance to the current USP 800 standards, a gap analysis will be performed. A gap analysis tool will be used to cross examine the current status at our hospital as it pertains to each standard. Compliance will be measured by evaluating policies, assessing equipment, and observing staff as it applies to the standard. Each standard consists of varying number of requirements to meet compliance. To measure compliance for the following areas: environmental quality and control, personal protective equipment, receiving hazardous drugs, and compounding standards; 200 unannounced direct staff observations will be performed over a 2 month period. A competency checklist with the requirements to meet each standard will be utilized to assess staff. Pharmacy staff scheduled to work within the cleanroom who are performing the activity scheduled for assessment will be included. Percent compliance will be calculated using the number of noncompliant observations over the number of total observations for each requirement. Noncompliance is defined as less than 100% compliance on any requirement. A plan will be developed to remediate all areas of noncompliance. Example

interventions may include writing required policies and procedures, educating and training pharmacy staff, performing staff competencies, and obtaining equipment.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 11-129

Poster Title: Evaluation of a pharmacist-led Patient Controlled Analgesia (PCA) dosing service

Primary Author: Katie Stollar, Beaumont Hospital - Royal Oak, MI; **Email:** katie.stollar@beaumont.org

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Purpose: A pharmacist-led Patient Controlled Analgesia (PCA) dosing service was developed and implemented in January 2015 at a 1,070-bed, private, non-profit, tertiary academic hospital. Evaluation of the service is to be conducted to determine efficacy of the program, to identify areas for service improvement, and to explore the opportunity to expand the service to a larger number of physician groups. The objective of this study is to compare physician versus pharmacist-led PCA dosing in an effort to assess clinical efficacy and safety of PCA use.

Methods: All pharmacist-dosed PCA consults to date will be retrospectively reviewed. Each pharmacist consult will be examined and patients will be classified as a surgical or medical case. These cases will then be matched to patients receiving physician-dosed PCAs based on medical or surgical classification. A chart review will be conducted to review clinical efficacy and safety endpoints. The following information will be collected from the electronic medical record: baseline demographics, indication for PCA, opioid chosen for PCA, risk factors for respiratory depression, pain scores, Richmond Agitation-Sedation Scale (RASS), length of stay, length of PCA therapy, utilization of medications to prevent and treat opioid-induced adverse effects, and adjustments made to PCA regimen. The primary endpoint will be time until sustained pain control defined as pain score less than 5 for two consecutive assessments. Secondary endpoints include time to first pain score less than 5 without a pain score greater than or equal to 7 in the following 24 hours, time to pain score less than 5, number of PCA adjustments, time to oral conversion, and assessment of adjunct medications ordered. Safety endpoints include naloxone administration, cardiopulmonary resuscitation/ rapid response team calls, RASS scores less than negative 2, and death. Data collected from this study will be further evaluated to determine

effectiveness of the current service and the feasibility to extend the service to additional physician groups.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-130

Poster Title: Dose appropriateness of renally cleared medications in patients with impaired renal function

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Purpose: Prescribing errors have been shown to affect 7 percent of medication orders and 50 percent of hospital admissions with incorrect dose being the most common error. Medications that are renally eliminated often require dose adjustments to maintain efficacy and avoid toxicity. Patients with chronically impaired and/or acutely changing renal function are at a higher risk for dosing errors. We aim to identify the most commonly prescribed renally eliminated medications and to quantify the extent of over and under dosage in this vulnerable population.

Methods: This quality improvement project has been submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients admitted to the hospital between January and December 2015 with chronic kidney disease stages 3, 4, or 5, end stage renal disease, or acute kidney injury using ICD-10 codes. Data on patient demographics (i.e., age, height, weight), comorbidities, renal function, medications and respective doses administered, and hospital location will be collected. The dosing of medications with significant renal elimination will be assessed for appropriateness based on a patient's estimated creatinine clearance and the regimen recommended by either: hospital protocol, drug manufacturer, or literature recommendations. Creatinine clearance will be estimated using the Cockcroft-Gault equation, consistent with hospital policy. The primary outcome of this study is to determine the appropriateness of medication doses. The information obtained from this medication use evaluation will be used to assess the need for analysis of related adverse events and the implementation of protocol changes and technology enhancements.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-131

Poster Title: Demographic and socioeconomic factors associated with nonadherence to chronic medications in a Marketplace population

Primary Author: Jacob Chaffee, Blue Cross Blue Shield of Michigan, MI; **Email:** jchaffee@bcbsm.com

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Purpose: The Pharmacy Quality Alliance (PQA) developed a measure specific to medication adherence that is included in the Quality Rating System (QRS) for Marketplace plans. As an insurer offering Qualified Health Plans (QHPs) on the Marketplace, Blue Cross Blue Shield of Michigan (BCBSM) is dedicated to developing targeted clinical programs and interventions aimed at improving adherence and health outcomes.
The primary objective of our research is to identify demographic and socioeconomic factors associated with nonadherence, measured by Proportion of Days Covered (PDC), to chronic medications in the Marketplace population.

Methods: This study is a retrospective cohort of BCBSM patients enrolled in a Marketplace QHP during 2015. Endorsed by the PQA as a measure of medication adherence, PDC will be used to quantify medication adherence rates of eligible patients. Patients are eligible for the PDC measure if they had an index prescription start date (IPSD) of an eligible therapeutic category between January 1, 2015 and September 30, 2015. As specified by PQA's measures specifications, eligible therapeutic categories include: renin-angiotensin system antagonists (RASAs), statins or non-insulin diabetes. Medication adherence rates are calculated using BCBSM pharmacy claims. Data for explanatory variables including zip code, age, sex, index claim, cost share, and plan type will be extracted from BCBSM pharmacy claims data. Income and ethnicity data are provided by Acxiom, a proprietary marketing tool containing census data not available in claims data. Individuals with PDC less than 80 percent are classified as nonadherent to the therapeutic category. Differences in demographic and socioeconomic factors between adherent and nonadherent groups are assessed using a chi-square test for

categorical variables and t-tests for continuous variables. Associations between demographic and socioeconomic factors with nonadherence are evaluated using a linear model-based regression analysis.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Evaluative Study

Session-Board Number: 11-132

Poster Title: Adjunctive naloxegol for the treatment of post-operative induced constipation in spinal surgery patients: A pilot study

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Purpose: Constipation is common after spinal fusion surgery and can be exacerbated by duration of surgery, amount of narcotics administered postoperatively, and intraoperative blood loss. Average length-of-stay for a lumbar laminectomy involving on average 3 levels is 3.5 days and average hospital billing for the related hospital stay is $14,766. The objective of this study is to evaluate the effectiveness of adding naloxegol, a peripherally-acting mu-opioid receptor antagonist, to a standard post-operative protocol that included a stool softener, osmotic agent, and a stimulant agent for patients receiving spinal surgery at a medium-sized, community teaching hospital in northwest Michigan.

Methods: This study is a retrospective chart review of patients who received spinal surgery from January 2014 through December 2016. Patients were included if they were between the ages of 18-84 years old, had a laminectomy, discectomy, and /or fusions, and received an opioid morphine equivalent daily dose of between 30 mg and 1000 mg per day prior to surgery. Patients were not included if they had pain associated with cancer, documented to be end-of-life, had pre-existing diarrhea or constipation, had evidence of gastrointestinal obstruction or increased risk of bowel perforation, or if they were already taking a peripherally-acting mu-opioid receptor antagonist prior to admission. The primary efficacy outcome is mean time to first bowel movement after spinal surgery. Secondary efficacy outcomes include incidence of postoperative constipation, mean hospital length-of-stay, and total hospital cost. Safety outcomes include prevalence of post-operative adverse effects including abdominal pain, diarrhea, nausea/vomiting, incidence of ileus, and premature discontinuation of naloxegol or other peripherally-acting mu-opioid receptor antagonist.

Results: Data from 59 patients was collected with 26 in the study group and 33 in the control group. Amount of daily opioid use (converted to oral morphine equivalence) was 66.7 mg (mean +/- S.D. 16.7) in the study group and 74.4 mg (mean +/- S.D. 27.1) in the control group ($p = 0.2093$). Days until the first post-operative bowel movement significantly decreased in the study group with 2.83 days (mean +/- S.D. 1.3) compared to 4.36 days (mean +/- S.D. 2.3) in the control group. Hospital length-of-stay significantly improved in the study group with 4.6 days (mean +/- S.D. 1.7) compared to 10.3 days in the control group ($p < 0.001$). Adding naloxegol to our standard post-operative bowel regimen protocol saved the hospital $19,731 when comparing average variable cost ($14,944 in the study group, $34,675 in the control group).

Conclusion: Adding naloxegol to a standard post-operative bowel regimen protocol for spinal surgery patients appears to decrease time to first post-operative bowel movement, decrease length of stay, decrease hospital costs, whilst not significantly causing harm to patients.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-133

Poster Title: Incidence and risk factors for cefepime-induced neurotoxicity in end stage renal disease patients

Primary Author: Jennifer Chou, Detroit Medical Center, MI; **Email:** jchou@dmc.org

Additional Author (s):
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Purpose: This retrospective cohort study aims to determine the incidence of cefepime-induced neurotoxicity in end stage renal disease patients on hemodialysis, to identify potential risk factors, and to quantify the number of patients requiring transfer to the intensive care unit due to severe encephalopathy.

Methods: Through retrospective chart review, patients 18 years or older on hemodialysis who have received at least two doses of cefepime during their inpatient stay will be identified. The following data will be collected: age, gender, height, weight, prior history of central nervous system disease or epilepsy; hemodialysis information such as date and time received, total run time, and filter type; cefepime administration information such as date and time of each dose, dose given, and frequency; laboratory data such as blood urea nitrogen, serum creatinine, albumin, white blood count, ammonia level, and microbiology results; and diagnostic testing results such as electroencephalogram reports, magnetic resonance imaging and computed tomography of the head, and Glasgow coma scores. Any new transfers to the intensive care unit or consultations to neurology for altered mental status or lethargy will be collected. Specific criteria and the Naranjo Adverse Drug Reaction Probability Scale will be used to determine probable cases of cefepime-induced neurotoxicity. Patient-specific factors, such as number of missed dialysis days and total daily cefepime dose, will be compared between those experiencing neurotoxicity and those who did not experience neurotoxicity. This analysis will determine whether there is an association between these factors and the likelihood of developing cefepime-induced neurotoxicity and can identify any potential areas for improvement in this institution's cefepime dosing and monitoring protocol in hemodialysis patients.

Results: In progress

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-134

Poster Title: Evaluation of the efficacy of combination dual antiplatelet therapy with oral anticoagulant therapy.

Primary Author: Whitney Gibson, Detroit Medical Center, MI; **Email:** wgibson@dmc.org

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Purpose: The combination of dual antiplatelet therapy (DAPT) with an oral anticoagulant used for various indications to prevent future thrombotic events is referred to as "triple therapy." Current data has focused on warfarin-containing combinations, which have showed no significant difference regarding risk of thrombosis with use of triple therapy compared to dual therapy or antiplatelet therapy alone, while only sparse data exists regarding efficacy when the direct oral anticoagulants (DOACs) are prescribed. The purpose of this study is to evaluate the risk of thrombosis in patients treated with DOAC-containing triple therapy compared to warfarin-containing triple therapy

Methods: This is a multicenter, retrospective, chart review which will include the six institutions within the metro Detroit area institutions. Each site will query their medical record database to identify both patients who were initiated on triple therapy during their hospitalization as well as patients admitted to the hospital for a thrombosis event. After the data is collected at each individual site, patient records will be assigned a unique code prior to de-identification to allow for identification of cross site readmission. Accuracy of extracted data will be verified through chart review of a sample of patients. Tests used for statistical analysis will be utilized as follows: descriptive data will be used to analyze prescribing patterns, chi-squared tests will be used to evaluate all nominal data, the Student's t test will be used to analyze continuous data, hazard ratios will be used to analyze events over time, log-rank tests will analyze time to events, survival will be analyzed using Kaplan-Meier, and sensitivity analyses will be performed using logistic regression.

Results: N/A - Research In Progress

Conclusion: N/A - Research In Progress

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-135

Poster Title: Sulfamethoxazole/trimethoprim associated acute kidney injury: Real or a mirage?

Primary Author: Laura Cwengros, Detroit Medical Center, MI; **Email:** lcwengro@dmc.org

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Purpose: Sulfamethoxazole/trimethoprim (SMX/TMP) is a first-line option for urinary tract infections, skin and soft tissue infections, and pulmonary infections due to Pneumocystis jirovecii and Stenotrophomonas maltophilia. SMX/TMP use is sometimes limited because of nephrotoxicity concerns. Evidence supporting these concerns is largely limited to small, noncomparative case reports/series and historical concerns with less soluble sulfonamides. These concerns are further complicated by small rises in serum creatinine caused by trimethoprim due to inhibition of tubular secretion of creatinine. The primary objective of this analysis is to determine if there is a true association between SMX/TMP use and AKI.

Methods: A retrospective matched cohort study of 600 patients within a multicenter hospital system who received treatment with SMX/TMP or a non-nephrotoxic comparator agent (300 patients in each group) will be performed. Patients will be eligible for inclusion if they received a target antimicrobial for at least 48 hours from January 1 , 2014 to September 30, 2016. Patients will be excluded if creatinine clearance at onset of therapy was less than 30 mL/min, or they had a pre-existing need for renal replacement therapy. Eligible patients will be identified through a review of the pharmacy database. Each SMX/TMP patient will be matched 1:1 to a patient receiving an alternative, non-nephrotoxic, antimicrobial therapy for the same indication. Matching parameters will consist of severity of illness, number of concomitant nephrotoxic agents, duration of therapy with targeted antibiotic, and intensive care unit (ICU) status at the commencement of therapy. Data collection will include demographics, co-morbid conditions, severity of illness, dose and duration of all antimicrobial exposures, ICU admission, relevant laboratory parameters, microbiology data, and receipt of concomitant nephrotoxic agents. The primary outcome will be defined as meeting the "Injury" classification of the Risk,

Injury, Failure, Loss, and End-stage kidney disease criteria (a 2-fold increase in the serum creatinine or decrease in GFR by 50 percent) to avoid misclassification of AKI due to insignificant rises in creatinine caused by trimethoprim.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-136

Poster Title: Analysis of inpatient medication requests to improve medication distribution processes

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Purpose: Children's Hospital of Michigan utilizes a medication request service as part of the electronic clinical information system. Nurses will file medication requests for various reasons including, inability to locate a medication, medication replacement, and medications requiring rescheduling. A surplus of medication requests to the pharmacy staff can significantly disrupt the efficiency and productivity for both pharmacy and nursing workflow, which ultimately leads to delayed medication delivery and administration. The purpose of this study is to examine the medication requests qualitatively, identify root causes, and develop recommendations that will improve medication distribution process.

Methods: This retrospective quality improvement project was conducted at Children's Hospital of Michigan of the Detroit Medical Center. Medication request data were pulled from the hospital's clinical information system from July 1, 2016 to July 14, 2016 and September 1, 2016, to September 14, 2016. Data included inpatient unit, medication name, route of administration, strength and schedule, nursing comments, status of request (i.e. completed, rejected, label printed), time of request input and time of response or action by pharmacy. Medication requests were categorized as either value-added or non-value-added. Value-added was defined as unavoidable medication requests (e.g. rescheduling, emergency and observation unit requests, bulk medication replacement). Non-value-added was defined as avoidable medication requests that hindered workflow (e.g. missing medications, floor stock shortages). The primary outcome of this study was to determine the percentage of medication requests that were defined as value-added versus non-value-added. The secondary outcomes of this study were to

determine the most frequently requested medications and the main reasons for non-value-added medication requests. Microsoft Excel software was used to classify and analyze the data. In November 2016, pharmacy will conduct a nursing survey regarding the medication distribution processes. This information will be used to develop protocol changes that are aimed at improving the efficiency of the medication distribution system. Medication requests will be evaluated in March 2017 to determine whether protocol changes were successful.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-137

Poster Title: Effect of cefepime versus piperacillin/tazobactam on hospital-acquired Clostridium difficile infections

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Purpose: Clostridium difficile is a major cause of healthcare-associated infections. Studies demonstrate increased hospital length of stay and expenditures with an average increase length of stay of 2.8-5.5 days and a mean of $3,000-$15,000 per episode. Identifying antibiotics associated with a higher incidence of Clostridium difficile infection (CDI) can be valuable in terms of reducing hospital-acquired CDI and establishing hospital standards. This study will evaluate the incidence of hospital-acquired CDI in patients who received cefepime versus piperacillin/tazobactam. Secondary objectives will include incidence of antibiotic-associated diarrhea and incidence of obtainment of Clostridium difficile polymerase chain reaction (PCR) amplification test.

Methods: This study is a retrospective investigation into the incidence of CDI at the Detroit Medical Center (DMC). Patients 18 years of age who received either cefepime or piperacillin/tazobactam for greater than 48 hours between January 1, 2012 and June 30, 2016 will be included. Data collected will include patient age, gender, race, past medical history, past medication history, admitting diagnosis and service, antimicrobial information, CDI severity, and hospital length of stay. CDI will be defined as 3 or more unformed stools within 24 hours plus a positive PCR amplification test. Antibiotic-associated diarrhea will be defined as 3 or more loose stools per day for at least 2 days with no positive stool PCR. CDI severity will be defined as mild to moderate for patients with a white blood cell count (WBC) less than or equal to 15,000 cells per microliter or a serum creatinine (SCr) less than 1.5 times baseline, severe for patients with a WBC greater than 15,000 cells per microliter or SCr greater than 1.5 times baseline, or severe complicated for patients with hypotension or shock, ileus, or megacolon.

Categorical variables will be analyzed using a Chi-Squared test or Fisher exact test, continuous variables will be analyzed with the Student's t-test, a linear regression model will be utilized for the primary endpoint and a P-value less than 0.05 will be considered statistically significant.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-138

Poster Title: Management of alcohol withdrawal in medical intensive care unit patients

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Purpose: Both scheduled and symptom-triggered dosing with benzodiazepines have been studied for the treatment of Alcohol Withdrawal Syndrome (AWS). Previous studies have concluded that symptom-triggered dosing is advantageous, leading to reduced doses of benzodiazepines and shorter treatment duration. The two dosing regimens have not been extensively compared in critically-ill patients. Order sets which utilize symptom-triggered dosing may help standardize patient care and minimize incomplete prescribing. The aim of this study is to evaluate the management of AWS in medical intensive care unit (MICU) patients before and after the implementation of an AWS order-set with symptom-triggered dosing of benzodiazepines.

Methods: This is a retrospective review of patients admitted to the MICU at the Detroit Medical Center from January 1, 2013 to July 30, 2016 with an ICD-9/10 admitting diagnosis of AWS. All patients must have received at least one dose of a benzodiazepine. Exclusion criteria include: allergy to benzodiazepines, active withdrawal from toxins other than ethanol, delirium unrelated to AWS, concurrent psychiatric disorders necessitating the use of benzodiazepines, and patients who are pregnant. Baseline characteristics to be collected include demographics, past medical history, laboratory tests (blood ethanol level, urine toxicology screen, liver tests, and electrolytes), SOFA score, CIWA-Ad score for the post order-set group, and baseline RASS score for those intubated. For all patients, the benzodiazepine dose (route, cumulative dose in lorazepam equivalents, and duration), use of adjunctive agents, and incidence of adverse outcomes will also be documented. The primary outcome of this study is to compare MICU length of stay between the scheduled and symptom-triggered dosing groups. Secondary outcomes include total dose of benzodiazepine, evaluation of adjunctive agents, serious

adverse effects, overall hospital length of stay, and mortality. A Chi-Square test or Fisher's Exact test will be used to assess nominal data and a student t-test or Mann-Whitney U test will be used to assess continuous data that are parametric and non-parametric, respectively. A p-value less than 0.05 will be considered statistically significant.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 11-139

Poster Title: Validation of a checklist to evaluate student performance in a problem based learning group

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Purpose: Problem-Based Learning (PBL) is a student-centered pedagogy that uses authentic, ill-structured cases as the stimulus for learning pharmacotherapy. At Wayne State University-Eugene Applebaum College of Pharmacy and Health Sciences (WSU-EACPHS), PBL is integrated as a course series in the curriculum. Evaluation of student performance in a group is one component of the PBL process. Standardization of the evaluation process using valid tools optimizes assessment of student learning. The objective of this study is to validate the checklist used in the PBL course series.

Methods: In 2015, pharmacy educators, committee members, and community volunteers helped create a standardized facilitator evaluation checklist for the assessment of student performance in a small group. The checklist was created based on course and program objectives as well as the goals associated with PBL. The Angoff Method for Standard Setting was used to determine the weighting of the score of each item on the checklist. The checklist is used to evaluate individual student performance in the small-group PBL setting. To evaluate the validity and reliability of the checklist, evaluation scores from 2015-2016 will be evaluated along with overall program GPA, and knowledge and problem solving exam scores. We hypothesize that facilitator evaluation scores will have moderate correlation with overall GPA and knowledge exam scores and strong correlation with problem solving exam scores. Descriptive statistics will be used to characterize the student population. Correlation will be assessed using the IBM Statistical Package for the Social Science (SPSS) predictive analytics software.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-140

Poster Title: Evaluation of anticoagulation treatment in patients with massive or submassive pulmonary embolism and concurrent deep vein thrombosis

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Purpose: Treatment recommendations for submassive/massive pulmonary embolism (PE) and a concurrent deep vein thrombosis (DVT) are lacking in current guidelines. Available treatment options include: anticoagulants alone; endowave catheter-directed thrombolysis with low-dose alteplase plus anticoagulation; or systemic thrombolytics plus anticoagulation. To date there are no studies comparing all treatment options for DVT/PE; our study will evaluate the safety/efficacy of the various anticoagulation treatment options in patients with concurrent PE/DVT. The primary objective of the study is to assess the recurrence of PE or other thrombotic events within 90 days; as well as in-hospital mortality, 30 day mortality and major/minor bleeding.

Methods: The study has been approved by the Institutional Review Board. This is a retrospective chart review that will include all patients presenting with a massive or submassive PE and a concurrent DVT from July 2010 to August 2016. Data collected will include: Patient demographics (weight, age, height), length of stay (hospital stay, intensive care unit length of stay), prior history for venous thromboembolism, co-morbidities, vital signs (blood pressure, heart rate), right ventricle diameter/left ventricle diameter ratio, complete blood count, BUN/SCr, liver function tests, fibrinogen, D-dimer, concomitant antiplatelet agents, concomitant systemic anticoagulation, total tPA dose infused, as well as start date/time, anticoagulant agent used, dose and start date/time, inferior vena cava filter placement, vasopressor requirement, diagnostic tests (echocardiogram, duplex ultrasound, CT, VQ scan), BNP, N-terminal pro-BNP, troponin I, troponin T, minor bleeding, major bleeding, in hospital mortality, 30-day mortality, 30 day readmission, recurrent PE or any other thromboembolic event within 90 days. Data will be grouped based on the treatment option used: Anticoagulants

alone (parenteral and/or oral); endowave catheter-directed thrombolysis with low-dose alteplase plus anticoagulation; or thrombolytics plus anticoagulation. Data will be analyzed using the Chi-Squared test for nominal data and Student's T-test for continuous data.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-141

Poster Title: Bleeding risk with apixaban versus warfarin in patients with kidney dysfunction

Primary Author: Claudia Hanni, Detroit Medical Center- Harper University Hospital, MI; **Email:** channi@dmc.org

Additional Author (s):
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Elizabeth Wilpula
Denise Sutter
Raymond Yost

Purpose: The use of apixaban in patients with impaired kidney function has not been extensively studied. Large clinical trials evaluating apixaban in patients with atrial fibrillation and/or acute venous thromboembolism excluded patients with creatinine clearance less than 25 mL/min. Small pharmacokinetic/pharmacodynamic studies have reported limited data, but did not include efficacy and safety outcomes. Furthermore, patients with impaired kidney function are at increased risk of bleeding without the presence of anticoagulation. This study will evaluate the risk of bleeding and the time to first bleeding event in patients on apixaban versus warfarin with creatinine clearance less than 25 mL/min.

Methods: This is an Institutional Review Board approved retrospective study. It will be conducted at three tertiary academic medical centers. Chart review will be performed on all adult patients 18 to 89 years old who were admitted from January 1, 2014 through December 31, 2015. Patients will be included who were initiated on apixaban or warfarin for at least 45 days of treatment with a creatinine clearance less than 25 mL/min. The target sample size is 1,000 patients. Data will be collected to include comorbidities, past medical history, social history, indication for anticoagulation, concomitant medication, stroke and bleeding risk scores, renal function, bleeding events, thrombosis events, complete blood count, and coagulation blood testing. This data will be used to determine rate of bleeding and time to first bleeding event of apixaban versus warfarin. Patients will be identified through each site's electronic medical record database, then de-identified data will be combined to create one database for analysis. The Chi-squared test will be used to evaluate all nominal data, student's t test will be used to analyze continuous data, and log-rank test to analyze time-to-event.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-142

Poster Title: Outcomes of chronic care management (CCM) in primary care practice

Primary Author: Insaf Mohammad, Detroit Medical Center/Harper University Hospital, MI;
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Purpose: Chronic disease states are a leading cause of morbidity and mortality. Management of conditions such as diabetes, hypertension, and heart failure requires ongoing care delivered beyond a primary care visit. As of January 1, 2015, Medicare began reimbursing non-face-to-face Chronic Care Management (CCM) services provided to patients with multiple chronic conditions. CCM focuses on care coordination, management at care transitions, and medication management. In August 2015, the pharmacy team in a patient-centered medical home serving geriatric patients implemented a CCM program. The purpose of this project is to evaluate the impact of this service on health outcomes and cost utility.

Methods: This is a quasi-experimental study evaluating the impact of a pharmacist-led CCM service. The electronic medical record will be utilized to collect glycated hemoglobin, blood pressure, LDL cholesterol, vaccinations, preventative health service provision, and acute care service utilization for each patient who received the CCM service. These variables will be collected from one year prior to and one year after the implementation of the CCM service. A validated survey will be used to assess patient satisfaction with pharmacist-led CCM services. An interrupted time series analysis will be used to evaluate the impact of CCM on the health-related variables collected. Standard parametric statistics will be used to analyze the results from the patient satisfaction surveys. A cost utility analysis will be conducted to determine if the CCM service is economically favorable.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-143

Poster Title: Evaluation of risk factors and treatment strategies for major bleeds in patients on warfarin therapy

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Additional Author (s):
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Elizabeth Petrovitch
Krista Wahby

Purpose: Warfarin is a commonly prescribed anticoagulant and is used in a variety of disease states including atrial fibrillation and venous thromboembolisms. Warfarin has a narrow therapeutic index and is associated with high rates of bleeding at international normalized ratio (INR) values above the target range. Despite many years of clinical experience, patient-specific risk factors that are associated with major bleeding are largely unknown. This study sought to determine which clinical factors predispose patients to major or fatal bleeding on warfarin therapy, and which reversal strategies or products are associated with positive clinical outcomes.

Methods: A retrospective observational study was performed using electronic medical record (EMR) review to identify adult inpatients with major or fatal bleeding on active warfarin therapy from July 1, 2014 to July 31, 2016. Major bleed was defined as hemoglobin drop greater than or equal to 2mg/dL, need for anticoagulant reversal products or blood transfusion, or ICD-9 or ICD-10 codes associated with major or fatal bleeding. Data was collected on pertinent laboratory information, concomitant medications, and specific patient diagnoses. Statistical analysis was performed to determine which patient-specific risk factors were associated with major or fatal bleeding on warfarin therapy and which reversal strategies and medications were most effective in patients who presented with major bleeding on warfarin therapy. Adherence to health system warfarin reversal guidelines was also assessed.

Results: Results are currently in progress.

Conclusion: Results are currently in progress.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-144

Poster Title: Effectiveness of a written continuing education module for specialty pharmacists: a prospective patient benefit analysis

Primary Author: Michael Phalen, Diplomat, MI; **Email:** mphalen@diplomat.is

Additional Author (s):
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Stephanie LaPointe
Bradley Behrend
Michael Crowe

Purpose: Continuing education is an important facet of pharmacy practice that has demonstrated improvement in knowledge of pharmacy professionals. However, few studies demonstrate how an increase in pharmacist knowledge translates into enhanced patient knowledge and improved outcomes. The objective of this study is to determine the effectiveness of the continuing education activity created by Pharmacy Times Continuing Education titled “Pharmacists Reaching Out: The Pharmacist Role in Management of Psoriasis and Psoriatic Arthritis” in improving patient knowledge of their disease state and therapy through increased pharmacist competence.

Methods: This study will be submitted to an external institutional review board for approval. This investigation will consist of two patient cohorts and one pharmacist cohort from a single specialty pharmacy. The first patient cohort will consist of patients with either psoriasis or psoriatic arthritis who have received counseling from a specialty pharmacist during a three month period prior to the study’s start date. This cohort will be offered a survey that aims to assess the patient’s knowledge of their therapy and disease state. Next, the pharmacy’s patient-facing pharmacists will be educated using an Accreditation Council for Pharmacy Education (ACPE) certified continuing education module for psoriasis and psoriatic arthritis during the month of October 2016. The second patient cohort will consist of patients similar to the first patient cohort, except that they will have received counseling from a specialty pharmacist who completed the continuing education module. This cohort will receive the same survey as the first patient cohort. The primary efficacy outcome of this study will be the comparison of correct patient answers from both patient cohorts. Secondary outcomes of this

study will include: analysis of pharmacist short-term and long-term information retention following the education intervention, examination of the impact of patient information source on knowledge of key counseling points, and comparison of patient attitudes towards adherence before and after counseling.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-145

Poster Title: Development, implementation, and assessment of a site-of-care program for specialty infusion products

Primary Author: Jonathan Clark, Diplomat, MI; **Email:** jclark@diplomat.is

Additional Author (s):
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Elizabeth Duruz
Amy Clarke
Michael Chester

Purpose: Specialty infusion drugs used in the treatment of chronic, rare conditions are usually administered to patients in a physician office, hospital outpatient, or home setting. Variations in cost of therapies and services across such settings have led to challenges for health plans in managing health care costs while maintaining adherence. Redirection of patients to lower-cost sites-of-care has been shown to effectively reduce copay and health plan expenditures. The objectives of this study are to assess the outcomes of a novel site-of-care program in the success of site-of-care redirection, cost avoidance, and patient satisfaction.

Methods: This prospective implementation, cost evaluation, and patient satisfaction study will collect claims data in order to identify patients receiving specialty infusion drugs that can be given safely and effectively at home. Patients will be identified between October 10, 2016 and June 1, 2017. The following data will be collected: patient age, gender, ethnicity, diagnosis codes, infused drug details, number of patients redirected to home infusion, costs for medical and pharmacy expenses, and patient satisfaction surveys. All data will be recorded without patient identifiers and maintained confidentially. Eligible therapies for redirection will include select alpha-1 proteinase inhibitors, enzyme replacement therapies, hemophilia factors, hereditary angioedema treatments, immune globulin products, and intravenous auto-immune therapies. Successful site-of-care redirection will be defined as the percentage of patients that achieve infusion site-of-care redirection from the physician office or hospital outpatient setting to home infusion upon their initial or second infusion dose. Evaluation of successful site-of-care redirection will be further analyzed based on drug category. Total health care costs and infusion

day costs will be measured using average monthly cost and per patient per month (PPPM) cost. Patient satisfaction will be assessed using a call-based survey.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-146

Poster Title: Evaluation of the appropriate empiric use of vancomycin and its implications

Primary Author: Hannah Beard, Henry Ford Allegiance Health, MI; **Email:** hannah.beard@allegiancehealth.org

Additional Author (s):
Gay Alcenius

Purpose: The Centers for Disease Control and Prevention (CDC) published a guideline for implementing hospital antimicrobial stewardship programs with a checklist of core elements. One of those elements is ensuring optimal antibiotic use for the treatment of common infections, such as skin and soft tissue infections and the empiric coverage of methicillin-resistant Staphylococcus aureus (MRSA). The objectives of this study are to see how vancomycin is currently used at this institution to stem further research into specific infections and de-escalation, and to examine its use in a specific infection, cellulitis, to determine if appropriate utilization of empiric MRSA coverage is occurring.

Methods: This medication utilization evaluation will be a retrospective chart review of a random sample of patients admitted to this institution who were prescribed vancomycin starting between May 1, 2016 and July 31, 2016, and received three or more doses. Children, prisoners, pregnant women, patients who received a dose in the operating room or had vancomycin prescribed by a surgeon, and patients who were on vancomycin prior to admission will not be included. The data collected will include patient demographics (age and sex), indication for use, the doses of vancomycin and number of days given, length of stay, whether or not de-escalation to narrow spectrum antibiotics occurred, discharge antibiotic orders, and specific indicators for MRSA coverage (presence of systemic inflammatory response syndrome, history of MRSA or injection drug use, immunocompromised state, failure of outpatient antibiotics, penetrating trauma, and documentation of severity of infection). The data will be analyzed using descriptive statistics. Institutional Review Board approval will be obtained.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-147

Poster Title: Update on the comparison of pharmacist managed warfarin therapy versus physician managed warfarin therapy

Primary Author: Richard Bramer, Henry Ford Allegiance Health, MI; **Email:** richard.bramer@allegiancehealth.org

Additional Author (s):
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Purpose: Warfarin is a narrow therapeutic index medication requiring frequent international normalized ratio (INR) lab monitoring to assess efficacy and safety. Appropriate dose adjustments and follow up are vital in the safe and effective management of warfarin patients. A study four years ago at this institution showed that pharmacist managed outpatient anticoagulation care led to a higher percentage of therapeutic INRs and fewer hospital admissions for bleeding or clots compared to management by physicians. This study will provide updated data to assess whether pharmacist managed warfarin care is still superior to physician managed care.

Methods: This study will be a medication use evaluation to assess the appropriateness of warfarin dosing in the outpatient setting. This study will involve patients who were admitted to a Medication Therapy Management (MTM) clinic for outpatient warfarin management and were subsequently discharged from the clinic between May of 2012 and August of 2016. Patients will be excluded if they have less than two months of INR values available in their medical record at either the clinic or their physician's office after they are stabilized on warfarin. Stabilized patients will be defined as those who are started on warfarin and have at least two consecutive INRs in range, patients who completed bridging with another anticoagulant, such as enoxaparin, and those who were admitted or discharged from the MTM clinic to or from their primary care physician. Data will be collected on these patients using their medical records. Data that will be collected includes demographic information, enrollment and discharge dates from the MTM clinic, INR values during warfarin therapy, number of hospital admissions for bleeding or clots, indication for anticoagulation, and the patient's physician. This study was approved by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-148

Poster Title: Evaluation of the use of oral anticoagulation in the intensive care unit

Primary Author: Julie Thomson, Henry Ford Hospital, MI; **Email:** jthomso2@hfhs.org

Additional Author (s):
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Long To
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Purpose: Limited published literature exists regarding the use of oral anticoagulation (OAC) in patients in the intensive care unit (ICU). Anticoagulation in critically ill patients often involves the use of agents that can be administered parenterally, closely monitored, and easily reversed. Earlier initiation of OAC in stabilized ICU patients has the potential to reduce hospital length of stay (LOS). However, such benefits should be balanced against any potential adverse events in this patient population. The purpose of this study will be to characterize the prescribing patterns and outcomes of OAC in patients admitted to the ICU at Henry Ford Hospital.

Methods: This will be a retrospective, observational cohort study conducted via electronic and manual chart review at Henry Ford Hospital. Non-pregnant adults over the age of 18 who received an OAC agent – including warfarin or a direct oral anticoagulant (DOAC; dabigatran, apixaban, edoxaban, or rivaroxaban) – while admitted to an ICU at the study institution from January 2015 to October 2016 will be included. One hundred and twenty subjects will be randomized for the data collection and evenly divided based on whether they received warfarin or one of the DOAC agents. Major outcomes of concern include adverse bleeding, thromboembolic events, and ICU and hospital LOS. The following data will be collected: patient demographics, OAC dosing regimen, sequential organ failure assessment (SOFA) score, indication for OAC, adverse events, use of reversal agents, and LOS. Descriptive results will be reported as number (percentage, %), mean (standard deviation), or median (interquartile range), as appropriate.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-149

Poster Title: Evaluation of appropriateness and safety of oral clonidine in Josephine Ford Cancer Institute (JFCI) infusion centers

Primary Author: Matthew Lei, Henry Ford Hospital, MI; **Email:** leimingzhe@gmail.com

Additional Author (s):
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Beejal Ganti

Purpose: In the United States, an estimated 32% of adults have hypertension, of whom 32% are considered to be controlled. Clonidine, a centrally acting alpha-2 adrenergic agonist, is the agent of choice in Josephine Ford Cancer Institute (JFCI) JFCI infusion centers for the treatment of hypertensive urgency and emergency. If the patient's blood pressure decreases, the scheduled infusion is given without further intervention. The purpose of this study is to assess the appropriateness of clonidine use in the JFCI infusion centers to develop a protocol for the management of hypertensive urgency and emergency.

Methods: This is a single-center, retrospective, cross-sectional study to assess the use of oral clonidine at four locations of the JFCI locations through in the Henry Ford Health System between November 2013 and June 2016. All adult patients who received oral clonidine for the treatment of hypertensive urgency or emergency on presentation to the infusion centers will be included. Pertinent exclusion criteria include patients under 18 years of age, pregnant or breastfeeding women, and prisoners. A retrospective chart review will be conducted to collect patient demographics, current antihypertensive regimen, the medication for infusion or purpose for the scheduled appointment, dose and frequency of oral clonidine administered, timing of clonidine administration, and administration of other anti-hypertensive medications during the scheduled appointment time. Descriptive statistics will be used for analysis. Measures of proportion, central tendency and variation will be described.

Results: To be presented.

Conclusion: To be presented.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-150

Poster Title: Money talks: Justifying ambulatory pharmacy services in outpatient clinics

Primary Author: Emily Blum, Henry Ford Hospital, MI; **Email:** eblum1@hfhs.org

Additional Author (s):
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Purpose: Pharmacists in hospital-based ambulatory clinics provide extensive patient care services including: improving patient access, providing medication education, and assessing medication related problems that ultimately improve patient outcomes. However, pharmacists are limited in their ability to generate revenue and justify their services if unable to bill third party insurances. In order to successfully be reimbursed, pharmacists must adequately document their services per Centers for Medicare and Medicaid Services (CMS) standards. The purpose of this study is to describe current ambulatory pharmacy services and identify opportunities to improve documentation in order to maximize potential return on investment at Henry Ford Hospital (HFH).

Methods: This retrospective, descriptive study was approved by the HFH Institutional Review Board. Over 900 pharmacy encounters will be analyzed for potential CMS billing opportunities from January 1, 2015 to December 31, 2015. The analysis will focus on patient-pharmacist encounters in the oral chemotherapy and pulmonary clinics at HFH in Detroit, Michigan. Each encounter will be quantified and classified based on CMS definitions and standards, specifically chronic care management, transitions of care management, or incident-to-physician billing opportunities. All pertinent descriptors included in CMS requirements will be collected and analyzed. The primary endpoint is percentage of encounters that meet CMS documentation standards. Secondary endpoints include: the average complexity of pharmacist encounters; estimated return on investment using reported reimbursement rates from the CMS physician fee schedule; and identifying areas in the current documentation that can be improved to maximize reimbursement. Data analysis will consist of descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-151

Poster Title: CLOT-P: Collection of thromboprophylactic prescribing patterns

Primary Author: Jason Chau, Henry Ford Hospital, MI; **Email:** jqchau@icloud.com

Additional Author (s):
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Surafel Mulugeta
Jesssica Efta
Nisha Patel

Purpose: A number of different risk factors can increase the likelihood of developing venous thromboembolism (VTE) during a hospital admission. Selection of an antithrombotic prophylaxis agent and its congruence to evidence-based medicine can play a role in preventing clot formation. At our institution, the perioperative VTE rate is higher than the national benchmark. However, recent data regarding VTE rates at our institution for medical patients is lacking. As such, this study will characterize antithrombotic prescribing patterns for the prophylaxis of acute VTE at an urban acute care hospital in order to identify potential risk factors for VTE development.

Methods: This IRB approved descriptive study will evaluate adult patients admitted to general practice units during a six-month period diagnosed with a VTE. Patients with a history of chronic or recurrent VTE or receiving therapeutic anticoagulation prior to admission will be excluded. Baseline demographics, antithrombotic medications, and sequential compression device (SCD) orders will be collected. Descriptive statistics will be used to analyze the data. This study will determine if the antithrombotic therapy prescribed followed established guidelines and/or institutional protocols for VTE prophylaxis in antithrombotic selection, dosage, and duration of therapy based on indication. The selected guidelines include American Academy of Orthopedic Surgeons (AAOS), American College of Chest Physicians (ACCP), American College of Physicians (ACP), and National Comprehensive Cancer Network (NCCN). The results from this study will be used to initiate targeted education for health care providers and standardize the prophylaxis prescribing habits with the goal of improving patient outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-152

Poster Title: Evaluation of Outcomes in Patients Discharged with Warfarin without Notification of Pharmacy Department

Primary Author: Stephen Kaurala, Henry Ford Hospital, MI; **Email:** skaural1@hfhs.org

Additional Author (s):
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Purpose: Warfarin is used to treat a variety of thromboembolic conditions. Careful management of warfarin therapy is required to reduce the risk of adverse events including, thromboembolism or bleeding. Inpatient pharmacists within the hospital in which the study is being conducted are involved in the transition of care of warfarin patients and provide warfarin recommendations at discharge. These recommendations include discharge regimen and time to next INR draw. However, some patients are discharged without obtaining these pharmacy recommendations. The goal of this study is to evaluate outcomes in patients discharged with warfarin without notification of the pharmacy department.

Methods: This retrospective chart review has been approved by the Institutional Review Board. The electronic medical records of 100 patients from January 1, 2015 to August 1, 2016 will be reviewed to identify patients for inclusion based on greater than or equal to eighteen years of age and who were discharged on warfarin without pharmacist discharge recommendations. The following data will be collected upon the initial discharge: patient demographics, warfarin indication, outpatient warfarin provider, INR goal, discharge time and floor. These data points will be assessed through descriptive statistics. Data to assess the appropriateness of the warfarin regimen at discharge will be home warfarin regimen, last inpatient warfarin regimen, INR upon discharge, recommendation for first outpatient INR check, discharge warfarin regimen, and new or discontinued medications which interact with warfarin. Data points that will be collected and assessed after discharge include time to initial follow up and readmission status at thirty, sixty and ninety days. If readmission data is available, additional data points that will be collected and assessed include INR upon readmission and whether or not patient

experienced a new thrombotic or bleeding event. These data points will be assessed through the use of descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-153

Poster Title: Vancomycin use for pneumonia in the medical intensive care unit: Is this necessary?

Primary Author: J. Spencer Dingman, Henry Ford Hospital, MI; **Email:** jdingma1@hfhs.org

Additional Author (s):
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Purpose: Improper use of antimicrobials limits their future effectiveness by promoting the development of multidrug-resistant pathogens. Infections caused by these organisms are associated with morbidity and mortality, particularly in critically ill populations. Approximately 27% of intravenous (IV) vancomycin use in United States hospitals may be unnecessary, and 36% of patients who receive IV vancomycin have potential for improvement in prescribing. One potential target for improved antimicrobial use is the proper utilization of vancomycin for serious Gram-positive infections. The objective of this study is to evaluate the inappropriate use of vancomycin therapy for patients with pneumonia in medical intensive care units (MICU).

Methods: This is a retrospective cross-sectional study of adult patients receiving IV vancomycin for pneumonia in the MICU between June 1st and July 31st, 2016. Patients are excluded if they are pregnant, are transferred from an outside hospital, or have a concurrent infection other than pneumonia. Each day of vancomycin therapy is characterized as appropriate or inappropriate based on pre-specified criteria. Empiric and definitive therapies are denoted by days of therapy (DOT) prior to and after culture results, respectively. Empiric therapy is assessed daily and may be considered appropriate for up to 72 hours in patients with hospital-acquired pneumonia or ventilator-associated pneumonia, pending the results of the Gram stain or culture. Definitive therapy is considered appropriate from the time the Gram stain or cultures show Gram-positive infection with: methicillin-resistant Staphylococcus aureus; Streptococcus pneumoniae with penicillin minimum inhibitory concentration >2 mcg/mL; or methicillin-sensitive Staphylococcus aureus, Streptococcus pneumoniae, Group A, B, C, or G Streptococcus, or viridans streptococci in patients with severe beta-lactam allergy. Any DOT not

meeting criteria for appropriate therapy will be considered inappropriate. Acute kidney injury is assessed by Acute Kidney Injury Network and American Society of Health-System Pharmacists position statement definitions. Baseline characteristics include demographics, antibiotic allergies, pneumonia classification, and imaging reports. Endpoints include total DOT, proportion of inappropriate DOT, and prevalence of acute kidney injury. Statistical analysis is descriptive in nature.

Results: Results will be presented at the 2016 Midyear Clinical Meeting.

Conclusion: Conclusions will be presented at the 2016 Midyear Clinical Meeting.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-154

Poster Title: No home antipsychotic medication in the intensive care unit? I'm shocked.

Primary Author: Mary Musgrove, Henry Ford Hospital
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Additional Author (s):
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Opal Bacon

Purpose: While discontinuation of antipsychotic medications initiated in the hospital for temporary indications has been a popular topic in current literature, few studies have been conducted to investigate home psychotropic continuation on admission to an intensive care unit. The purpose of this study is to evaluate the continuation of home antipsychotics and/or mood stabilizers upon admission to an intensive care unit (ICU), assess patient safety outcomes while admitted, and to evaluate what antipsychotic or mood stabilizer the patient is prescribed upon transfer out of the ICU and upon discharge.

Methods: This study was accepted by the Institutional Review Board of Henry Ford Health System. A retrospective chart review of 100 ICU patients admitted to Henry Ford Hospital between January 1, 2015 and June 30, 2016 will be completed. The electronic medical record will identify patients who had a home medication list with an antipsychotic or mood stabilizer present within 3 months of admission. The primary outcome is the frequency of continuation of home antipsychotic or mood stabilizer medications upon admission to an ICU. Secondary outcomes to be evaluated are antipsychotics or mood stabilizers that the patient was transferred out of the ICU and/or discharged home with, incidences of delirium and agitation, and over/under sedation. Furthermore, if a home antipsychotic or mood stabilizer was discontinued on admission, documentation of the reason for discontinuation or an appropriate, undocumented indication for discontinuation will be investigated. Appropriate discontinuation will be defined as a patient presenting with a medical condition that could be attributed to the psychotropic medication or supratherapeutic psychotropic medication levels. Finally, we will collect data evaluating safety events, all antipsychotic or mood stabilizer medications that the

patient had initiated or discontinued throughout the hospital admission, mental health disorder diagnosed, length of stay in both the ICU and hospital, and intubation days. Descriptive statistics will used to interpret the findings.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-155

Poster Title: Evaluating clozapine missed doses after the implementation of the new clozapine risk evaluation and mitigation strategies (REMS) program

Primary Author: Sarah Yousif, Henry Ford Macomb Hospital
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Additional Author (s):
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Idan Hannawa
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Purpose: The recent update to the clozapine REMS program requires prescribers to be certified prior to prescribing the medication. In accordance with the updated program, Henry Ford Health System incorporated the required changes and implemented a new clozapine protocol in March, 2016. Shortly after implementation, several inpatient pharmacists identified missed clozapine doses in comparison to the previous program. The purpose of this study is to look into the possible increase in missed clozapine doses and investigate the potential impact the new program may have had on these incidental findings.

Methods: This study will be submitted to the Institutional Review Board for approval. We conducted a retrospective chart review to compare the number of missed doses before implementing the updated REMS requirements to the number of missed doses after the program and protocol implementation. Using the electronic health record system, we generated a list of all patients who missed a dose of clozapine from January 2015 through September 2016. We identified the missed orders due to REMS registration issues compared to the number of missed doses due to other reasons. The data collection includes demographic information of patient age and gender. In regard to the order information, we included the following: the date of the order, date of administration, duration of the delay, the reason for the delay, patient registration with REMS, provider registration with REMS, psychiatric provider involvement and documentations provided in the patient chart regarding the cause of the missed dose. Data were recorded without patients' identification and maintained confidentiality.

Results: To be presented at the 2016 ASHP Midyear Clinical Meeting in Las Vegas, NV.

Conclusion: To be presented at the 2016 ASHP Midyear Clinical Meeting in Las Vegas, NV.

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-156

Poster Title: Adverse drug reactions associated with asparaginase agents in adult patients with acute lymphoblastic leukemia

Primary Author: Craig Landry, Karmanos Cancer Center, MI; **Email:** clandry03@gmail.com

Additional Author (s):
Chin Liu

Purpose: Acute lymphoblastic leukemia (ALL) is a malignant disease of the bone marrow in which early lymphoid precursors proliferate and replace the normal hematopoietic cells. Asparaginase is one of the primary chemotherapy drugs used to treat ALL. The asparaginase product has three formulations; the natural product derived from Escherichia coli (E. coli), a pegylated formulation of E. coli form, and another isolated from erwinia chrysanthemi. Asparaginase's side effect profile includes: hepatic transaminitis, hyperbilirubinemia, hypersensitivity, pancreatitis, thrombosis, and coagulopathies. The primary objective is to analyze the safety profile related to the route of administration with different asparaginase agents.

Methods: This is a retrospective study in patients receiving E. coli asparaginase or pegasparaginase at an adult cancer center from January 2011 through June 2016. A list of patients on asparaginase agents will be generated from the pharmacy dispensing record for screening study patients' eligibility. All patient identifiers will be removed and each patient will be assigned a unique ID number. Patient inclusion criteria includes: age between 18 and 90, diagnosis of ALL, and treatment with a chemotherapy regimen including E. coli asparaginase or pegasparaginase. Exclusion criteria include pregnancy. The following basic demographic information will be collected: patient specific identifiers, age, gender, race, allergies, height, weight, body surface area, regimen of chemotherapy containing E. coli asparaginase or pegasparaginase, dosage, number of doses, and route of administration. Clinical notes will be reviewed and collected for adverse drug reactions associated with asparaginase agents. Descriptive statistics will be applied. This study is currently under review for approval by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Evaluative Study

Session-Board Number: 11-157

Poster Title: Evaluating the time to de-escalation of antibiotics following positive blood culture results in a community hospital

Primary Author: Chaundra Cox, Mercy Health Muskegon, MI; **Email:** chaundra.cox@mercyhealth.com

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Purpose: In addition to the patient's clinical response, blood culture results are utilized to direct appropriate therapy including de-escalation of antibiotics. De-escalation of empiric antibiotic therapy such as using fewer agents and/or using reduced spectrum agents has advantages including reducing antibiotic toxicity and decreasing the development of resistance. In addition, de-escalation can decrease the emergence of antibiotic exposure-related infections such as Clostridium difficile. The purpose of this study was to determine the length of time from positive blood culture results to antibiotic de-escalation.

Methods: Data was collected for 30 days via a report generated from an electronic surveillance system. Inclusion criteria consisted of adult inpatients admitted to the hospital with positive blood culture results and antibiotic administration during hospitalization. Patients were excluded if their blood cultures did not direct the course of antibiotic treatment or if their antibiotic regimen was not de-escalated after finalization of blood culture results. Primary outcome was time to antibiotic de-escalation after organism identification and time to antibiotic de-escalation after sensitivity results. Secondary outcomes included number of infectious disease consults and type of bacteria identified on blood culture.

Results: Research in progress to be presented on poster at midyear meeting.

Conclusion: Research in progress.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-158

Poster Title: Evaluation of current practices for transitioning patients from direct oral anticoagulants to warfarin at Mercy Health Muskegon

Primary Author: Brandon Cushman, Mercy Health Muskegon, MI; **Email:** brandon.cushman@mercyhealth.com

Additional Author (s):

Purpose: Since 2010, direct oral anticoagulants (DOACs**)** have been available as an option for patients requiring anticoagulation for deep venous thrombosis, pulmonary embolism, or atrial fibrillation. Unlike warfarin, DOACs do not require coagulation lab monitoring or dietary restrictions. Sometimes patients need to transition from a DOAC to warfarin which can be challenging due to lack of evidence-based recommendations and limited published research. The purpose of this study is to evaluate the current management of patients transitioning from DOACs to warfarin at Mercy Health Muskegon.

Methods: This study was submitted to the Institutional Review Board for approval. A report from the primary care electronic health record identified patients who were transitioned from dabigatran, rivaroxaban, or apixaban to warfarin at Mercy Health Muskegon. Inclusion criteria consisted of patients transitioning from a DOAC to warfarin from January 2016 to September 2016. Exclusion criteria included patients less than 18 years of age. The primary outcome was the method of transition used for each patient. Methods of transition included overlapping warfarin with a DOAC, overlapping warfarin with a parenteral agent, and no overlap at all. Secondary outcomes evaluated include adverse events, indication for anticoagulation, and reason for transition to warfarin.

Results: Research In Progress

Conclusion: Research In Progress

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-159

Poster Title: Patient adherence to hepatitis c medications at an outpatient specialty pharmacy

Primary Author: Matthew Ferro, Mercy Health Muskegon, MI; **Email:** matt.ferro@mercyhealth.com

Additional Author (s):

Purpose: Historically, treatment for hepatitis C has been relatively poor, with cure rates below 60%. Patient compliance has been an issue with previous treatments due to a myriad of negative side effects. The emergence of new treatment options has helped raise cure rates above 90% with minimal side effects. Clinical trials have demonstrated that patient compliance is a key factor in achieving cure rates and preventing spread of disease. The purpose of this medication review was to assess patient adherence to current hepatitis C medications at an outpatient specialty pharmacy.

Methods: This evaluation will be submitted to the Institutional Review Board for approval. Retrospective data was collected over a 5 month time period in 2016. Reports were generated from the pharmacy management software and included prescribed medication, initial pick-up date, refill pick-up dates, number of refills authorized, and quantity of medication filled. Inclusion criteria consisted of hepatitis C treatment with ledipasvir-sofosbuvir, and elbasvir-grazoprevir for a full 12 week prescribed course. Patients were excluded if they did not begin and finish treatment within the 5 month study period. The primary endpoint was percent adherence to therapy based on prescription pick-up date. Secondary endpoints included the number of pharmacy phone calls made to the patient and potential cost of non-compliance to the health system.

Results: Research in progress.

Conclusion: Research in progress.

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-160

Poster Title: Analysis of patient and provider interactions with ambulatory pharmacists in the primary care setting

Primary Author: Kendyll Erickson, Mercy Health Muskegon, MI; **Email:** kendyll.erickson@mercyhealth.com

Additional Author (s):

Purpose: Mercy Health Muskegon ambulatory pharmacists have been embedded in primary care physician office practices since 2005. Ambulatory care pharmacists have many roles including co-managing chronic conditions, educating patients on medications and disease states, and serving as a resource to the healthcare team. Currently, patient visits to the pharmacist are by provider referral. Patient interaction with the pharmacist includes scheduled face-to-face appointments and/or phone consultations. Medications are managed through collaborative practice agreements and discussions with the healthcare team. This study was conducted to analyze the number of patient and provider interactions and time spent devoted to patient care.

Methods: This study will be submitted to the Institutional Review Board for approval. Ambulatory pharmacists collected data over a period of four weeks using an internal protected online spreadsheet. Twelve internal medicine or family practice physician offices with ambulatory pharmacists were included for review. Data collection by the ambulatory pharmacists was dependent on their scheduled clinic days ranging from once monthly to three times weekly. Primary objectives included number of patient and provider interactions. Secondary objectives included time spent interacting with patients and staff, number of missed initial and follow-up appointments, and provider referral frequency.

Results: Research in progress.

Conclusion: Research in progress.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-161

Poster Title: Gastric Acid Suppression in Stress Ulcer Prophylaxis at a Western Michigan Teaching Hospital

Primary Author: Thomas Beuschel, Mercy Health Saint Mary's, MI; **Email:** thomas.beuschel@mercyhealth.com

Additional Author (s):
Julie Belfer

Purpose: Utilization of gastric acid suppression such as proton pump inhibitors (PPIs) and histamine-2 receptor antagonists (H2RAs) to prevent stress ulcer development is a common concern amongst the critically ill. Across healthcare systems, there has been reports of stress ulcer prophylaxis (SUP) being continued longer than indicated as patients are transferred out of the critical care unit or discharged home. The primary objective of this study is to assess use and selection of gastric acid suppression for SUP. Secondary objectives include evaluation of dosing regimens utilized, route of administration, potential cost savings of early pharmacist intervention, and discontinuation of therapy.

Methods: This International Review Board approved retrospective chart review will be conducted at Mercy Health Saint Mary's, a community teaching hospital. An electronic medical record will be used to generate a list of patients that meet the following inclusion criteria: age greater than 18 years, admitted to critical care or have a critical care consult, and received at least one dose of a gastric acid suppressing agent (defined as pantoprazole, lansoprazole, or famotidine). Total sample size was calculated to be 150 patients total (75 in the famotidine group and 75 in the PPI group). Data points to be collected include agent, dose, route, criteria to meet appropriate therapy, days of unnecessary intravenous (IV) therapy and days SUP not indicated. Appropriate interchange from IV formulations to enteral administration will also be assessed to determine if IV to enteral switches are being made and to quantify unnecessary IV therapy use. A calculation will be completed using unnecessary days of therapy to determine how potential pharmacist-led discontinuation of inappropriate therapy may impact healthcare costs. Potential costs saved will also include missed IV to oral conversion opportunities. All variables will be evaluated using descriptive statistics. Descriptive statistics will mostly employ

means to describe total days of therapy, days of inappropriate therapy, and days of inappropriate IV therapy.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-162

Poster Title: Evaluation of an intravenous to oral policy for antiepileptic medications and vitamins

Primary Author: Benjamin Kulwicki, Mercy Health Saint Mary's, MI; **Email:** benjamin.kulwicki@mercyhealth.com

Additional Author (s):
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Purpose: While there are circumstances that dictate the need for medications to be given intravenously (IV), the oral (PO) route is preferred when available. Mercy Health Saint Mary's (MHSM) has a policy that allows pharmacists to convert medications from IV to PO when criteria are met. Along with antimicrobials, the policy includes antiepileptics, vitamins and levothyroxine. The objective of this study is to evaluate the proportion of appropriate conversions from IV to PO when policy criteria are met. Additionally, this study will quantify the cost associated with failing to convert eligible patients and identify opportunities for process improvement.

Methods: The Institutional Review Board approved this retrospective cohort study. This study will review 120 randomly selected adult patients who received more than one dose of IV lacosamide, levetiracetam, valproic acid, thiamine, folic acid, or levothyroxine at MHSM between January 1 and June 30, 2016. Patients will be excluded if they were discharged home from the emergency department, have short gut syndrome, unable to take oral medications at baseline, or if their IV medication was converted to PO by providers other than pharmacists. Data will be collected from the MSHM's electronic medical record database and include patient characteristics, medication characteristics, and IV to PO eligibility criteria. Using the policy's criteria, a determination will be made if patients were eligible for conversion from IV to PO. Any additional IV doses given past the eligible conversion time will be considered inappropriate and associated with a cost. Analyses will be performed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-163

Poster Title: Impact of Rapid Identification and Antimicrobial Stewardship Intervention on Bacteremia in a Community Teaching Hospital

Primary Author: Derek VanderHorst, Munson Medical Center, MI; **Email:** dvanderhorst@mhc.net

Additional Author (s):
Nicholas Torney
Anne Gore

Purpose: Bacteremia has been associated with poor patient outcomes including a high mortality and extended hospital length of stay. Several studies have shown that the use of rapid diagnostic tests when coupled with real-time intervention from a pharmacist has shown improvements in patient outcomes and decreased health-system costs. The majority of this data stems from large academic institutions with a large amount of resources. The purpose of this study is to determine the impact of rapid identification and antimicrobial stewardship intervention on patients with bacteremia on improving patient outcomes and decreasing health-system costs within a community teaching hospital.

Methods: This study will be submitted to the Munson Medical Center Institutional Review Board for approval. To be included in the study patients must be at least eighteen years of age and have at least one positive blood culture. Patients with the following characteristics will be excluded from this study: less than eighteen years of age, pregnancy, polymicrobial blood cultures, active hospice/palliative care, known culture results at the time of admission, or history of solid organ/hematopoietic stem cell transplant . The primary endpoint of the study will be in-hospital mortality. Secondary endpoints include hospital length of stay, intensive care length of stay, cost of hospital stay, time to effective antimicrobial therapy, time to optimal antimicrobial therapy, and thirty day readmission rate. A protocol was created for the notification of positive blood cultures to the infectious diseases pharmacist and rapid pathogen identification via the BioFire FilmArray® system. Patients with at least one positive blood culture prior to the implementation of the rapid identification protocol will be retrospectively selected as the control arm. Patients with at least one positive blood culture after the implementation of the rapid identification protocol will be retrospectively selected as the

intervention arm. This study will select seventy-five of the most recent patients to meet inclusion criteria for both arms. Information will be collected via a manual chart review with the Cerner system.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-164

Poster Title: Role of ambulatory care pharmacist in outpatient cardiology clinic: Focus on atrial fibrillation

Primary Author: Allie Wasik, Munson Medical Center, MI; **Email:** awasik@mhc.net

Additional Author (s):
Heather Tolfree

Purpose: Atrial fibrillation (AF) is the most common cardiac arrhythmia in the United States and is associated with increased mortality. Emergency department visits and hospital admissions related with uncontrolled atrial fibrillation are on the rise while the treatment of AF alone accounts for 26 billion dollars annually. Patients with atrial fibrillation are at increased risk for significant adverse drug events and medication errors due to polypharmacy and high-risk medications. The objective of this study is to justify cost of clinical pharmacist to be involved in medication therapy management, drug monitoring and integration into the ambulatory cardiology decision-making process.

Methods: This study will take place at Traverse Heart and Vascular, a service partner of Munson Medical Center. This clinic serves 37,000 residents in northern Michigan across 11 practice locations. This study is meant to evaluate pharmacy services at the Traverse City location only. This study is pending approval of the institution's Internal Review Board and is meant to identify the most high risk population for readmission of poorly controlled atrial fibrillation. The electronic medical record will identify patients for inclusion based on: diagnosis of atrial fibrillation, 2 or more hospital admissions in the last year related to AF, those on an oral anticoagulant (OAC) and patients on either rate or rhythm control. Patients will be excluded if they are less than 18 years of age or pregnant. Data points to be collected include: classification of AF, type of OAC, which antiarrhythmic or rate control therapy, optimization status of doses, proper monitoring of OAC and antiarrhythmic and adherence. All data will be deidentified and recorded on the secure Munson Information Systems network. A clinical pharmacist will work with primary electrophysiologist to optimize medication management through patient education, close monitoring of high risk medications such as amiodarone and novel anticoagulants, and coordinate transitions of care from the inpatient to outpatient setting.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-165

Poster Title: Implementation and evaluation of a pharmacy led rounding team for patients enrolled in the alcohol withdrawal protocol

Primary Author: Bradley Haan, Munson Medical Center, MI; **Email:** bhaan2@mhc.net

Additional Author (s):
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Purpose: Patients with alcohol use disorders who are admitted to the hospital must be managed for the possibility of alcohol withdrawal syndrome. The high mortality rate associated with alcohol withdrawal syndrome makes it of high importance if caring for one of these patients. Currently, there is no standardized practice for managing these patients leading to inconsistent care and mismanagement during hospitalization. The purpose of this study is to implement a devoted pharmacist role to care for these patients and retrospectively assess its effectiveness.

Methods: This study will be a retrospective, chart review evaluating patients who have been enrolled in the alcohol withdrawal protocol before and after the implementation of a pharmacist led rounding team. The pharmacist led rounding team will include a standard work-up for the pharmacist in order to assess symptoms, medication use and potential interventions. Outcomes of this study will include hospital length of stay, duration of alcohol withdrawal, adherence to the protocol, cumulative amounts of benzodiazepine doses, incidence of adjunct therapy use, and rates of intubation. The patients must be enrolled in to the alcohol withdrawal protocol and over the age of eighteen to be enrolled in the study. Descriptive statistics will be used to assess outcomes.

Results: To be determined.

Conclusion: To be determined.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-166

Poster Title: Optimization of Clostridium difficile treatment utilizing patient risk factor assessment and an antimicrobial stewardship bundle

Primary Author: John Robinson, Munson Medical Center, MI; **Email:** jrobinson7@mhc.net

Additional Author (s):
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Purpose: Clostridium difficile infections (CDIs) have been identified as an urgent threat by the Centers for Disease Control (CDC) and is a major focus of antimicrobial stewardship programs across the United States. This study will analyze the impact that an antimicrobial stewardship team has on compliance of an evidence-based C. diff bundle for patients with active CDI in a community hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will be quasi-experimental in nature. Patients will be identified by positive C. diff toxin PCR and/or active orders for oral vancomycin. Data that will be collected include patient age, gender, serum creatinine, white blood cell count, number of bowel movements, blood pressure, systemic antibiotic use, acid suppressant use, probiotic use, anti-peristaltic use, and appropriate CDI treatment (antibiotic selection and duration of therapy). All data will be recorded without patient identifiers and stored securely. The primary outcome is incidence of compliance with bundle elements. Bundle elements will be weighted based on their association with disease recurrence, complications, and impact on outcomes. Secondary outcomes include compliance with each individual bundle element, in-hospital mortality, length of stay, and recurrence rates up to 60 days. Appropriate statistical analysis will be applied to parametric and non-parametric data.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-167

Poster Title: Identification of modifiable risk factors for delirium in mechanically ventilated patients in a community-based medical center

Primary Author: Joseph Zerka, Munson Medical Center, MI; **Email:** jzerka@mhc.net

Additional Author (s):
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Purpose: Delirium affects 30-80% of ICU patients and is associated with increased time on the ventilator, longer ICU length of stay, and increased mortality. At Munson Medical Center, the incidence of delirium within the intensive care unit is unknown. The primary objective of this analysis is to identify the incidence of delirium within the ICU, defined by a single positive CAM-ICU exam. The secondary objective is to identify modifiable risk factors that will contribute to positive CAM-ICU scores. This will be accomplished by a retrospective chart review of mechanically ventilated patients at a 400-bed community based medical center.

Methods: Prior to initiation, this project will be submitted for review to the Institutional Review Board. The electronic medical record will be used to identify patients who are CAM-ICU negative at admission and become CAM-ICU positive during their time in the intensive care unit. Inclusion criteria include patients admitted to the intensive care unit with mechanical ventilation. Exclusion criteria include patients with active alcohol withdrawal and patients ≤18 years. The following baseline data will be collected: sex, age, admission diagnosis, and patient type (i.e. medical, trauma). The incidence of delirium will be defined as a positive CAM-ICU exam having followed a negative CAM-ICU exam whilst in the ICU. Patients who are CAM-ICU positive will then be matched with CAM-ICU negative patients based on age and admission diagnosis. Modifiable risk factors, including cumulative benzodiazepine and steroid administration and nighttime medication administration 24 hours preceding delirium incidence, will be examined between groups.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-168

Poster Title: Impact of pharmacist intervention on duration of antibiotic therapy in patients with non-intensive care unit community acquired pneumonia: a quasi-experimental study

Primary Author: Katelin Anderson, Munson Medical Center, MI; **Email:** kanderson22@mhc.net

Additional Author (s):
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Purpose: Current literature suggests that antimicrobial stewardship programs can have a significant impact on optimizing therapy and improving outcomes for common disease states, such as community-acquired pneumonia (CAP). The primary objective of this study is to determine if pharmacist intervention decreases length of antibiotic therapy in patients with non-intensive care unit (ICU) community acquired pneumonia (CAP) at Munson Medical Center. The antimicrobial stewardship team currently performs prospective audit and feedback on patients receiving broad-spectrum antibiotics, but does not target pneumonia patients specifically.

Methods: This study is awaiting investigational review board approval. This study is a quasi-experimental chart review of patients with a diagnosis of pneumonia who presented to Munson Medical Center. Retrospective data were collected as a part of the Michigan Hospital Medicine Safety Consortium by a nurse data specialist. Patients with an admitting diagnosis of pneumonia will be included. Patients will be excluded: if they are admitted to an intensive care unit, less than eighteen years of age, have a CD4 count less than 200, have neutropenia, are status post-transplant. For the prospective arm of the study, the infectious diseases (ID) pharmacist and physician will review patients with pneumonia and make recommendations to the primary provider in regards to the antimicrobial agent and duration of therapy. Outcomes will be compared to historical data that were collected without targeted ID pharmacist intervention. The primary outcome of this study is to determine if patients who receive pharmacist intervention have a decreased duration of therapy. Secondary outcomes include concordance with Infectious Diseases Society of America guidelines, Clostridium difficile infection rates, thirty day readmission rate, bacterial pathogen, length of hospital stay, and

mortality. Appropriate statistical analysis will be applied to parametric and non-parametric data.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-169

Poster Title: Evaluation of alcohol withdrawal management at a large community teaching hospital

Primary Author: Daraoun Mashrah, not applicable, MI; **Email:** daraoun.mashrah@beaumont.org

Additional Author (s):
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Rebecca Goldsmith
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Purpose: Prevalence of alcohol abuse in the United States is approximately 18%. Alcohol withdrawal syndrome (AWS) occurs when there is a cessation or reduction of alcohol use leading to severe withdrawal symptoms affecting patients overall quality of health. These patients are at higher risk for longer intensive care unit and hospital length of stays, as well as mortality. Benzodiazepines are traditionally the treatment of choice for AWS; however, there are alternative methods of treatment. The purpose of this study is to evaluate compliance of a protocol for AWS treatment in a large community teaching hospital.

Methods: This is a single-center retrospective study of adult patients being treated for AWS from July 1, 2015 through June 30, 2016. The electronic medical record will be used to identify patients treated for AWS. Pregnant patients will be excluded from this study. Compliance to our institutional protocol for AWS, which uses the Clinical Institute Withdrawal Assessment for Alcohol tool and standardized lorazepam doses, will be evaluated, as well as pertinent data in order to identify appropriate management and treatment strategy. The patient demographics and past medical history will also be collected. Descriptive statistics will be used to compare patient baseline demographics and characteristics. Results from this data may help improve AWS treatment practice in our institution as well as provide better quality of care for our patients.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-170

Poster Title: Impact of warfarin dosing on short-term bleeding events in left-ventricular assist device patients

Primary Author: Audrey Rosene, Spectrum Health, MI; **Email:** audrey.rosene@spectrumhealth.org

Additional Author (s):
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Purpose: While the outpatient anticoagulation management in left-ventricular assist device (LVAD) patients is somewhat well-described, there is a paucity of data related to peri-operative warfarin use and its associated outcomes. Evidence exists to guide heparin and aspirin use, but the lack of data regarding warfarin causes high variability in dosing strategies to mitigate the risks of thrombotic and bleeding events. The objective of this study is to compare the incidence of peri-operative bleeding events between LVAD patients who achieved a therapeutic INR in less than or equal to 7 days versus greater than 7 days.

Methods: This study is a retrospective review of adult patients admitted to Spectrum Health Butterworth Hospital for an LVAD implantation from January 1st, 2011 to July 30th, 2016. A minimum of 51 patients will be included in each arm to meet 80% power and to detect a 33% difference in bleeding events between the two comparator groups. Data that will be collected includes: baseline demographics , LVAD-related data, history of bleeding or thrombotic event, anticoagulation therapy prior to LVAD implantation, and relevant pre-and post-operative laboratory values.. Intraoperative data to be collected includes surgical technique, need for cardiopulmonary bypass, and administration of fresh frozen plasma , cryoprecipitate, packed red blood cells, platelets, Factor IX complex (Profilnine®), Prothrombin complex concentrate (Kcentra®), and Antihemophilic Factor/von Willebrand Factor Complex (Humate-P®). Post-operative coagulation data, including heparin and aspirin use, will be collected as well as timing of warfarin initiation and time to therapeutic INR (days). The primary outcome comparing the incidence of major or minor bleeding events between the two aforementioned groups will be defined using INTERMACS definitions. Other outcomes include incidence of pump thrombosis, ICU length of stay, hospital length of stay, and mortality.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-171

Poster Title: Implications of high-dose intrapartum maternal gentamicin on neonates

Primary Author: Andrea McCarty, Spectrum Health, MI; **Email:** andrea.mccarty@spectrumhealth.org

Additional Author (s):
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Beata Rivard
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Purpose: The use of intrapartum high-dose extended interval gentamicin is becoming standard practice for various obstetric conditions; however, literature is lacking on the ideal dosing of gentamicin in neonates born to mothers who received high-dose extended interval gentamicin during the intrapartum period. The purpose of this study is to evaluate the safety and efficacy of one institution's gestational age-based gentamicin protocol in neonates whose mothers received intrapartum high-dose extended interval gentamicin.

Methods: This retrospective chart review will be conducted at a single institution in Grand Rapids, Michigan. Neonates will be included in the study if they were born to mothers who received high-dose extended interval gentamicin at least once during the intrapartum period and if they received at least one dose of gentamicin within 24 hours post-delivery. Maternal data to be collected includes age, delivery method, baseline serum creatinine, and number of gentamicin doses prior to delivery. Neonatal data to be collected includes gestational age, birth weight, gentamicin dose, initial gentamicin trough, urine output or diaper count, and length of hospitalization. The primary objective is to compare the proportion of neonates with a gentamicin trough level greater than 1 mcg per mL from a historical control group within the literature to the proportion of neonates with a gentamicin trough level greater than 1 mcg per mL from the present study where the mother received intrapartum high-dose extended interval gentamicin. Secondary objectives include the incidence of neonatal dose adjustment, calculated sepsis risk score, mean change in urine output and diaper count, length of hospitalization, and in-hospital mortality. Statistical analysis will include independent samples t-test for quantitative variables and chi-squared test for qualitative variables. A one-tailed two-proportion z-test will

be used to evaluate the primary endpoint. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-172

Poster Title: Effect of desmopressin on hematoma expansion in patients with spontaneous intracranial hemorrhage on antiplatelet agents

Primary Author: Brooke Crandall, Spectrum Health, MI; **Email:** brooke.crandall@spectrumhealth.org

Additional Author (s):
Kyle Schmidt

Purpose: Spontaneous intracranial hemorrhage (sICH) is a devastating condition with a high incidence of early deterioration. Antiplatelet therapy at the time of sICH diagnosis may be associated with worse outcomes. Desmopressin has been shown to increase von Willebrand factor in patients with platelet dysfunction and help restore coagulation. Current guidelines for the reversal of antithrombotic agents in ICH recommend consideration of a single dose of desmopressin in sICH associated with antiplatelet agents, although data supporting its use is minimal. This study aims to evaluate the efficacy of desmopressin in patients with sICH on an antiplatelet at the time of diagnosis.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a retrospective chart review of adult patients admitted to Spectrum Health Butterworth Hospital with spontaneous intracranial hemorrhage. ICH and APACHE-II scores will be utilized to match patients on an antiplatelet agent at diagnosis of sICH who received desmopressin similar to patients who did not receive desmopressin for comparison. Patients will be excluded if they presented with traumatic brain injury, have an active coagulopathy (including anticoagulation) and/or have thrombocytopenia. Data will be collected to characterize patient demographics, length of stay, discharge disposition, hemodynamic data, functional neurological outcomes, concomitant medications and blood product utilization. The primary outcome will be incidence of hematoma expansion on follow-up head computed tomography scanning performed after the initial scan. Secondary outcomes will include in-hospital mortality and change in Modified Rankin Scale from baseline.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-173

Poster Title: Impact on renal function and tolerability of everolimus based immunosuppression in adult thoracic transplant patients

Primary Author: Shelby Kelsh, Spectrum Health, MI; **Email:** shelby.kelsh@spectrumhealth.org

Additional Author (s):
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Purpose: Everolimus based immunosuppression has been increasingly utilized off-label in heart and lung transplant patients due to a different adverse effect profile than standard first-line immunosuppressive therapy of tacrolimus, mycophenolate mofetil, and prednisone. Everolimus may offer potential benefits in select patients including those that develop renal dysfunction, malignancy, cytomegalovirus infection, cardiac allograft vasculopathy, and bronchiolitis obliterans syndrome post-transplant. The purpose of this study is to assess the efficacy and safety of everolimus based immunosuppressive therapy in heart and lung transplant patients.

Methods: This retrospective chart review has been submitted to the Institutional Review Board for approval. Patients that underwent a heart or lung transplant and received everolimus between November 2010 and September 2016 with at least 90 days follow-up will be included. Baseline demographics and characteristics will be collected and include age, sex, race, transplant type, transplant indication, concomitant immunosuppression, cytomegalovirus donor and recipient serostatus, and everolimus indication and start date. The following endpoints will be collected and compared prior to and after everolimus initiation: estimated glomerular filtration rate utilizing the modification of diet in renal disease equation, need for renal replacement therapy, incidence of rejection and grade if applicable, presence of donor specific anti-HLA antibodies, incidence of infection and type if applicable, incidence of malignancy, incidence of cardiac allograft vasculopathy in heart transplant, and incidence of bronchiolitis obliterans syndrome in lung transplant. In addition, total cholesterol, triglycerides, LDL cholesterol, presence of leukopenia defined as white blood cell < 3,000 cells/mm3, presence of neutropenia defined as absolute neutrophil count < 1,000 cells/mm3, presence of proteinuria, documented edema, and documented delayed wound healing will be collected at baseline and after everolimus initiation to assess tolerability. The primary endpoint is the

change in estimated glomerular filtration rate utilizing the modification of diet in renal disease equation, from baseline to 3 months post-everolimus initiation.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-174

Poster Title: Duration of steroid taper after vasopressor cessation in septic shock

Primary Author: Ahlam AlMansoub, Spectrum Health, MI; **Email:** ahlam.almansoub@spectrumhealth.org

Additional Author (s):
Matthew Gurka

Purpose: The Surviving Sepsis Campaign guidelines recommend hydrocortisone in an effort to restore hemodynamic stability in patients with septic shock refractory to fluid resuscitation and vasopressor therapy. Hydrocortisone is recommended to be tapered off when vasopressor therapy is no longer required; however, current guidelines make no recommendation regarding the optimal duration of hydrocortisone taper. The purpose of this study is to investigate the effects of the duration of hydrocortisone taper on 28-day incidence of return to vasopressor support.

Methods: This retrospective cohort study will evaluate patients admitted to the intensive care units (ICUs) at Spectrum Health Butterworth and Blodgett campuses in Grand Rapids, MI for septic shock between December 15, 2015 and November 30, 2016. Patients included in the study must be 18 years of age or older, initiated on the institutional severe sepsis order set, required treatment with at least two vasopressors or a dose of a single vasopressor of norepinephrine or epinephrine greater than or equal to 0.2 mcg/kg/min, dopamine greater than or equal to 10 mcg/kg/min, or phenylephrine greater than or equal to 100 mcg/min, treated with vasopressors for at least one hour, and treated with at least 200 mg total daily doses of hydrocortisone for at least 24 hours before taper. Data will be collected for two intervention arms: patients exposed to an initial total daily dose of 200 mg or greater of hydrocortisone until vasopressor cessation and then (1) tapered over 3 or fewer days or (2) tapered over greater than 3 days. The primary outcome will be incidence of vasopressor resumption, defined as restarting vasopressor support during or after hydrocortisone taper within 28 days of initial withdrawal. Secondary endpoints will include ICU length of stay, hospital length of stay, ICU mortality, hospital mortality, total duration of hydrocortisone exposure, total hydrocortisone dose exposure, and duration of vasopressor use.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-175

Poster Title: Antithrombin III dose response in children on extracorporeal membrane oxygenation

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Additional Author (s):
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Purpose: Systemic anticoagulation is imperative during extracorporeal membrane oxygenation (ECMO) to prevent thrombus formation on non-biological surfaces of the ECMO circuit. Unfractionated heparin, the anticoagulant agent of choice, functions by potentiating antithrombin III (ATIII), an endogenous anticoagulant. Inadequate ATIII levels are often supplemented with ATIII concentrate when increased rates of heparin are required to maintain therapeutic anticoagulation. However, there is little published evidence on best practices for ATIII dosing in pediatric patients on ECMO. The purpose of this study is to evaluate the dose response to ATIII concentrate in pediatric patients by assessing the change in ATIII plasma levels post-supplementation.

Methods: An antithrombin III dosing guide for neonatal and pediatric patients was implemented at Helen DeVos Children's Hospital (HDVCH) in November 2013, which utilizes a patient-specific dosing weight to account for the ECMO circuit volume. This single-center, retrospective study aims to analyze pediatric patients who received at least one dose of ATIII concentrate while on ECMO in the pediatric intensive care unit at HDVCH between November 1, 2013 and August 31, 2016. The primary objective of this study is to determine the change in ATIII plasma levels after administration of ATIII concentrate. Secondary objectives include evaluating the effects of ATIII concentrate on unfractionated heparin requirements, correlated changes in coagulation lab values, and transfusion requirements at time of ATIII dose and up to 72 hours post-ATIII supplementation. Safety endpoints include number of bleeding and thrombosis events. Descriptive statistics will include patient demographics, indication, type, and duration of ECMO, ICU and hospital length of stay, and in-hospital mortality. Quantitative data will be expressed as mean ± standard deviation, while qualitative data will be expressed as a percentage. Linear regression analysis will be performed to determine the change in ATIII

plasma levels after the first administration of ATIII concentrate, and subsequent ATIII doses will be analyzed via linear multiple regression. The effects of ATIII supplementation on heparin requirements will be evaluated via repeated measures ANOVA.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-176

Poster Title: Evaluations of medications upon discharge utilizing automatic therapeutic interchanges

Primary Author: Raymond Phung, St. John Hospital and Medical Center, MI; **Email:** raymond.phung@ascension.org

Additional Author (s):
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Purpose: Automatic therapeutic interchanges (ATIs) have been employed by many institutions to optimize medication utilization while reducing cost. Automatic therapeutic interchanges are described as the exchange of a therapeutically equivalent drug from a patient's home regimen to a medication on a hospital's formulary. There are concerns that if automatic therapeutic interchanges are not executed properly, patients may be discharged with potential detrimental medication errors. The purpose of this study is to evaluate the frequency a patient is returned to original home therapy upon discharge following automatic therapeutic interchange of a medication to the hospital's formulary.

Methods: This single-center, retrospective chart review will evaluate adult patients who were admitted to St. John Hospital and Medical Center with at least one home medication documented as an angiotensin-converting enzyme (ACE) inhibitor, angiotensin receptor blocker (ARB), antidepressant, insulin, inhalers, or metformin, and switched to a hospital formulary medication via automatic therapeutic interchange (ATI). Patients will be identified by an order from the Cerner system for a therapeutic interchange from January 1, 2016 to June 30, 2016. Patients will be excluded if they expired prior to discharge.
Data collected will include patient's baseline demographics, including patient's age, gender, and race; admission drug name, strength, and dose; ATI drug name, strength, and dose; discharge drug name, strength, and dose; length of stay, hospital service responsible for patient care, and patient disposition.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-177

Poster Title: Loose use of continuous infusion midazolam

Primary Author: Nathan French, St. John Hospital and Medical Center, MI; **Email:** nathan.french@ascension.org

Additional Author (s):
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Purpose: Benzodiazepines are discouraged for routine sedation in critically ill patients due to deleterious side effects; however, use may be appropriate in select situations. The goal of this study is to evaluate the appropriateness of benzodiazepine infusions in critically ill patients requiring mechanical ventilation.

Methods: This study has been approved by the Institutional Review Board. This retrospective, observational study will evaluate adult patients (n=150) with an order for midazolam infusion from January – August 2016. Criteria for appropriate use will be defined as history of alcohol abuse/withdrawal, status epilepticus, refractory agitation or ventilator dyssynchrony with hypotension maximized on alternative agents, therapeutic paralysis, or chronic benzodiazepine use. Patients will be evaluated to determine if appropriate analgesia and “as needed” benzodiazepine were trialed prior to initiation of midazolam infusion. Adverse effects while receiving midazolam infusion will be collected, including delirium, over sedation, and need for a head CT prior to extubation. Renal function, hepatic function, and CYP3A4 drug interactions will be assessed to determine the risk of midazolam accumulation.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-178

Poster Title: Tissue plasminogen activator (tPa) administration accuracy and timing in the emergency department (ED) with a pharmacist versus no pharmacist present

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George Delgado

Purpose: An observational retrospective review assessing tPa administration time and accuracy has the potential to decrease medical errors in the emergency department. This study will investigate the effectiveness of having pharmacist coverage in the emergency department to assist with tPa administration.

Methods: This single-center, retrospective, chart review study will evaluate all patients 18 years and older who received tPa in the ED at St. John Hospital and Medical Center. A list of all patients receiving tPa from January 2013 to July 2016 will be generated from the St. John Pharmacy Information System. Patients will be further categorized to include only the patients who received tPa in the ED. No patient will be excluded if they fit these criteria.
Data collection will include age, gender, race, time patient arrived to the hospital, symptom onset, NIH stroke scale classification (initial, 24 hours after, 48 hours after, discharge), tPa administration information (order time and needle time), whether a pharmacist was present, and reason for delay in tPa administration (if applicable).
Door to Needle times will be assessed, with the goal door to needle time of 60 minutes or less.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-179

Poster Title: Safety and efficacy of high-dose intravenous labetalol

Primary Author: Syeda Mahmood, St. Joseph Mercy Hospital, MI; **Email:** maahin@umich.edu

Additional Author (s):
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Purpose: The intravenous (IV) labetalol package insert suggests a maximum daily dose of 300 milligrams despite the widespread use of much higher daily doses in hypertensive emergencies. Multiple studies have looked at patients that received more than 300 milligrams per day but none specifically looked at safety outcomes. The only literature available on the safety of this practice are case reports. This will be the first study of its kind to assess the safety and efficacy of this practice.

Methods: This is a retrospective, multi-center study, whose patients will be identified using the electronic medical record. Patients are eligible for the study if they have received at least 300 milligrams of IV labetalol within a 24 hour period. Patients will then be followed from that point for 24 more hours to ascertain the occurrence of study outcomes. The primary outcome will examine the incidence of hypotension (systolic blood pressure less than 90 mmHg) or bradycardia (heart rate less than 60 beats per minute). Secondary outcomes will evaluate the incidence of hypotension alone, the incidence of bradycardia alone, the time to reach blood pressure goal, presence of symptomatic bradycardia or use of rescue agents, and the effects on length of stay or mortality. The following data will be collected: patient demographics, comorbidities, and past medical history as well as primary diagnoses, blood pressure and heart rate information during the admission, IV labetalol rate, cumulative dose, number of drug titrations, hospital length of stay, intensive care unit length of stay, and mortality information. Multivariate Cox proportional hazards model will be used to model the association between additional doses of IV labetalol beyond 300 milligrams and the time to events. This study will be submitted to the Institutional Review Board for approval, and all data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-180

Poster Title: Clinical and economic outcomes from a community hospital's ASP: Part II

Primary Author: Scott Kollmeyer, St. Joseph Mercy Hospital - Ann Arbor, MI; **Email:** kollmey2@gmail.com

Additional Author (s):
Curtis Collins

Purpose: Antimicrobial resistance, Clostridium difficile infection (CDI), and cost of infection are a serious public health issue and a continuing concern for hospitals across the country. Many studies have been published reporting the beneficial effects of antimicrobial stewardship programs (ASP), some of which include reduced rates of resistance and CDI as well as reduced cost. A previous study at our institution reported decreases in CDI and antimicrobial cost during the first year of the ASP. Since then, our ASP has continued to evolve. The objective of this study is to evaluate the sustained success of our ASP following our initial report.

Methods: This study has been submitted and approved by our organization's Institutional Review Board. All adult patients with an antimicrobial order admitted to our facility between January 2011 and December 2015 will be included. Study outcomes will include: the incidence of multi-drug resistant infections, hospital length of say, intensive care unit days, readmission within 30 days, mortality within 30 days, total antimicrobial costs, antimicrobial costs per patient-day, criteria restricted antimicrobial cost per patient day, and antimicrobial days of therapy per 1,000 patient days. Outcomes will be stratified by calendar year and trended. A cost-analysis will be performed analyzing indirect cost-avoidance due to reductions in CDI and MDR infection rates.

Results: n/a

Conclusion: n/a

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-181

Poster Title: Evaluation of a protocol implemented for the inpatient management of acute agitation

Primary Author: Sarah Kean, St. Joseph Mercy Hospital, Ann Arbor, MI; **Email:** sarah.kean@stjoeshealth.org

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Nina West

Purpose: Outside of the intensive care setting and for patients in alcohol withdrawal, there is little data and no standardized way to manage acutely agitated patients. The objective of this study is to determine if the use of a nursing-driven treatment protocol, which includes a standardized assessment scale, for the management of acute agitation will reduce adverse events, improve appropriate dosing of antipsychotic/anxiolytic medications, and reduce the need for restraints.

Methods: A treatment protocol for the management of acute agitation, which includes a standardized scale for assessing level of agitation, will be designed by a multidisciplinary team and approved by the medical staff. The use of this protocol will be piloted on two medical nursing units. The efficacy of this protocol will be studied via a retrospective chart review pre- and post- implementation, after receiving approval from the Institutional Review Board. All adult patients who received medical management for agitation will be included. Patients being treated for alcohol withdrawal will be excluded. The following patient data will be collected: medical unit, date of admission and discharge, age, gender, weight, creatinine clearance, ethnicity, marital status, medication allergies, home medications, primary reason for agitation, fall (yes/no), anxiolytics/antipsychotics prescribed and number of doses given, concurrent medications, restraints (yes/no), total time in restraints, and nursing assessment documentation. The following outcomes will be evaluated: percentage of patients requiring restraints, mean number of hours in restraints, percentage of falls, risk of QTc prolongation based on categories defined by hospital guidelines, and the use of “as needed” doses of anxiolytics/antipsychotics. Additionally, nursing perception and comfort level in managing acutely agitated patients will be evaluated through two anonymous surveys, given pre- and post- protocol implementation.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-182

Poster Title: Determining an optimal blood glucose management strategy for acute coronary syndrome patients at a community teaching hospital

Primary Author: Jennifer Gregory, St. Joseph Mercy Hospital-Ann Arbor, MI; **Email:** jennifer.gregory001@stjoeshealth.org

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Purpose: There has been considerable controversy regarding the appropriate therapeutic strategy for managing blood glucose levels in acute coronary syndrome (ACS) patients. Controversy regarding blood glucose management in this patient population stems from several studies providing conflicting mortality results with aggressive glycemic control. The goal of this study is to evaluate the aggressiveness of blood glucose management in ACS patients at our institution, by comparing insulin drips to conventional therapy (i.e. insulin sliding scale/basal-bolus), specifically evaluating the safety and efficacy of each.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients who are admitted between the dates of October 2014 and October 2016 with a diagnosis of ACS will be eligible for review. To be included in this study, patients must present with an admission blood glucose value greater than or equal to 180 mg/dL, be managed via insulin therapy, and have a hospital length of stay of at least 48 hours. Patients will be excluded from review if they have any type of hypersensitivity reaction to insulin, are pregnant, are less than 18 years of age, are undergoing therapeutic hypothermia, or are transferred to a non-cardiac unit during their hospital admission. Patient data will be gathered retrospectively from electronic medical records. The efficacy of blood glucose management will be determined from the patient's average blood glucose value during hospital admission, considering all blood glucose recordings from the entire hospital length of stay. The safety of each blood glucose management strategy will be determined via the incidence of hypoglycemic events. Patient outcomes in accordance to blood glucose management strategy, such as 30-day hospital mortality and 30-day hospital readmission rate, will also be evaluated.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-183

Poster Title: Appropriateness of pharmacy renal dosing service interventions

Primary Author: Krystyna Mott, St. Joseph Mercy Oakland, MI; **Email:** krystynamott@gmail.com

Additional Author (s):
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Dustin Gladden

Purpose: Renal drug dosing services provided by a pharmacist have been shown to increase appropriate dose recommendations, decrease adverse drug events, and decrease drug costs. The purpose of this study is to assess the current appropriateness and clinical outcomes associated with the pharmacy adjusted renal dosing service approved at St. Joseph Mercy Oakland. This study will also serve to assess the appropriateness of documentation being done on these patients through the medication surveillance advisor.

Methods: The medication surveillance advisor will be used to identify patients to include in a retrospective chart review. Within a six-month time period, all patients on antimicrobial, anticoagulant, or famotidine therapy within the renal dosing protocol, with alerts for renal function dose adjustment will be included. Patients that are pregnant or less than eighteen years of age will be excluded. Baseline demographic information collected will include: age, sex, and ethnicity. Appropriateness of pharmacy adjusted dosing based on renal function will include patient clinical outcomes. These outcomes will include: effectiveness, such as clinical resolution of infection, and adverse drug events, such as bleeding. Kidney function will be assessed at baseline, and over the length of stay of the patient. Assessment of whether medication doses have been increased or decreased appropriately according to the pharmacy renal dosing protocol will be documented. The number of alerts fired by the medication surveillance advisor will be compared to the number of alerts documented by pharmacy to assess the appropriateness of documentation being done.

Results: To be presented at the 2016 ASHP Midyear Clinical Meeting in Las Vegas, NV.

Conclusion: To be presented at the 2016 ASHP Midyear Clinical Meeting in Las Vegas, NV.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-184

Poster Title: Assessment of appropriate use of stress ulcer prophylaxis in hospitalized patients

Primary Author: Megan Cruz, St. Joseph Mercy Oakland, MI; **Email:** meondusky@yahoo.com

Additional Author (s):
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Sawsan Shayota
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Purpose: The incidence of stress related mucosal damage has decreased over time. In patients with risk factors, proton pump inhibitors (PPI) and histamine-2 receptor antagonists (H2RA) are the recommended drugs of choice for stress ulcer prophylaxis (SUP). There are currently guidelines for SUP prescribing at Saint Joseph Mercy Oakland (SJMO), but adherence has not recently been assessed. The purpose of this study is to assess the current management of SUP in hospitalized patients, including the appropriateness of use and discontinuation.

Methods: This retrospective chart review, submitted to the Institutional Review Board for approval, will be conducted by identifying patients admitted to the hospital in August 2016 that received more than one dose of a PPI or H2RA. Data will be collected from electronic medical records. Patients will be excluded from the study if they have a history of gastroesophageal reflux disease, if they are on a home regimen of a PPI or H2RA, if they are pregnant or breast feeding, if they are less than eighteen years of age, and if they have an indication for PPI or H2RA use other than SUP. Clinical outcomes and parameters assessed will include indications for SUP, patient history, inpatient medications, discharge medications, renal function, hepatic function, length of stay, acquired infections such as pneumonia and clostridium difficile, total drug costs, appropriateness of dose, and conversion from intravenous to oral dosage form. All data will be recorded without patient identifiers and maintained confidentially. Primary outcomes include the appropriate utilization and discontinuation of SUP as defined by SJMO SUP guidelines. Secondary outcomes consist of adverse events associated with the SUP treatment and total drug costs.

Results: To be presented at the 2016 ASHP Midyear Clinical Meeting in Las Vegas, NV.

Conclusion: To be presented at the 2016 ASHP Midyear Clinical Meeting in Las Vegas, NV.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-185

Poster Title: State of outpatient opioid analgesia prescribing in a community teaching hospital: A surveillance study assessing acute pain patients presenting to the emergency department

Primary Author: Michelle Stewart, St. Joseph Mercy Oakland, MI; **Email:** michelle.stewart@stjoeshealth.org

Additional Author (s):
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Purpose: When it comes to prescribing opioid pain medications, Emergency Room practitioners are at the front lines of the ongoing opioid epidemic. With nearly two-thirds of all emergency room visits accounting for a pain related illness, the task of providing compassionate and responsible patient care is becoming increasingly more difficult. The purpose of this study is to assess the current state of ambulatory analgesia prescribing for adults by Emergency Department providers at St. Joseph Mercy Oakland (SJMO) to determine key impact areas for a pharmacist-delivered provider education series.

Methods: This is a retrospective chart review study of patients presenting the SJMO Emergency Department (ED) during a six-month time period. The study will use de-identified patient information to analyze the rates and respective trends of opioid and nonopioid prescribing at discharge. The specific opioid analgesics that will be included in the analysis are hydromorphone, morphine, oxycodone, hydrocodone, codeine, and tramadol. The specific nonopioid analgesics that will be included are acetaminophen, ibuprofen, and naproxen. Data to be collected from the electronic medical record (EMR) will include, but not limited to: patient demographics, primary care provider designation, relevant inpatient and outpatient prescribing information, admitting diagnosis, pain scores, and source of primary payment. Patients will be included in the study if they presented to the ED with a chief complain of abdominal pain, back pain, chest pain, headache, musculoskeletal pain, tooth/mouth pain, or ear pain. This study will exclude any patients who are less than eighteen years of age, pregnant or breastfeeding, have a history of cancer or sickle cell disease, or were subsequently admitted to the hospital from the ED for further medical attention.

Results: To be presented at the 2016 ASHP Midyear Clinical Meeting in Las Vegas, NV.

Conclusion: To be presented at the 2016 ASHP Midyear Clinical Meeting in Las Vegas, NV.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-186

Poster Title: Appropriateness of clostridium difficile management at a community teaching hospital

Primary Author: Drita Nicaj, St. Joseph Mercy Oakland, MI; **Email:** drita.nicaj@stjoeshealth.org

Additional Author (s):
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Purpose: Clostridium difficile (C. diff) is an anaerobic bacteria causing colitis symptoms in patients. Literature indicates that this infection Is responsible for the majority of nosocomial infectious diarrhea. But the burden of this infection extends beyond the patient and is staggering for the healthcare system. The Infectious Diseases Society of America (IDSA) has identified therapy guidelines for the treatment and prevention of C. diff infection. St. Joseph Mercy Oakland (SJMO) has tailored their C. diff guideline to reflect the IDSA recommendations. The objective of this medication usage evaluation (MUE) is to determine the compliance rate with the C. diff treatment guideline.

Methods: This study has been submitted to the Institutional Review Board for approval. Retrospective data will be collected via the electronic medical record. The inclusion criteria of this MUE is 18 years of age or older, having a diagnoses of C. diff through a positive stool culture test/enzyme immunoassay for C. diff toxins, and receiving treatment for C. diff with oral vancomycin or oral metronidazole. Data collection will include: patient demographics (age, gender), antimicrobial lab culture results, medications prescribed, white blood cell count, serum creatinine level, number of prior episodes of C. diff, consultation orders for an infectious disease specialist, physician notes, length of stay at the hospital, presence of vasopressors, toxic megacolon or ileus, probiotic therapy, and documented pharmacy interventions. The primary outcome of this MUE is to assess the appropriate choice of antimicrobial therapy based upon the currently approved SJMO C. diff guidelines. Secondary outcomes will include the percent completion of the entire C. Diff bundle. Complete compliance with the C. Diff bundle will include the discontinuation of unnecessary acid-suppressing medications and unnecessary antibiotics.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-187

Poster Title: Impact of in-utero exposure to selective serotonin reuptake inhibitors (SSRIs) and opioids on neonatal abstinence syndrome (NAS)

Primary Author: Jessika Richards, University of Michigan Health System, MI; **Email:** richarjr@med.umich.edu

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Purpose: The use of opioids and antidepressants during pregnancy is widespread and the incidence of infants born with neonatal abstinence syndrome (NAS) has steadily increased over the past decade. Prenatal exposure to both of these drug classes can have significant impact on the neurobehavior of infants often leading to long, complex, and costly hospitalizations. The objective of this study is to compare short term outcomes of neonatal abstinence syndrome treatment in infants exposed in-utero to opioids alone or opioids plus selective serotonin reuptake inhibitors (SSRIs).

Methods: This single-center retrospective cohort study has been submitted to the Institutional Review board for approval. All infants admitted to the Brandon Newborn Intensive Care Unit (NICU) at C.S. Mott Children's Hospital between January 2009-July 2016 meeting criteria will be identified through electronic health records and the Vermont Oxford Network (VON) database. Infants will be grouped into two cohorts based on in-utero exposure to an opioid alone or an opioid plus an SSRI. Infants whose mother received an opioid or an opioid plus an SSRI and was greater or equal to eighteen years of age with a gestation greater or equal to thirty-four weeks and who required treatment of NAS with methadone at a postnatal age of less than or equal to seven days of life based on NICU treatment guidelines will be included in the study. Infants will be excluded if they received methadone for treatment of iatrogenic withdrawal or were prenatally exposed to psychotropic medications other than SSRIs. Neonatal and maternal demographic data will be collected. Additionally, the following data points will be collected: max Finnegan score, time to symptom control, length of methadone treatment, length of hospitalization, cumulative methadone dose, second medication use, and discharge therapy.

The primary endpoint of this study will be the total length of treatment with methadone for resolution of NAS symptoms.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-188

Poster Title: Outcomes in the Treatment of Previously Untreated Elderly Acute Myeloid Leukemia: A Comparison of Clofarabine versus Fludarabine (FLAG)

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Purpose: Optimal therapy for Acute Myeloid Leukemia **(**AML) in elderly patients remains controversial and the presence of comorbid conditions, decreased drug clearance, and an increased proportion of unfavorable cytogenetics all contribute to poor response rates and overall survival (OS). Data regarding the optimal induction strategy in these patients are limited. Our institution utilizes a Clofarabine based or FLAG induction regimen upfront for fit elderly AML patients, whereas unfit elderly patients receive Decitabine. This study will compare complete response rates, long-term efficacy outcomes, along with treatment related morbidity and mortality between Clofarabine based and FLAG induction regimens.

Methods: This study will be a retrospective case-control study of previously untreated elderly (>60 years old) patients with AML who were treated at the University of Michigan Hospital between January 1st, 2003 and December 31st, 2013 with Clofarabine or FLAG induction regimen. The primary outcome of the study is the complete response rate after induction therapy. Data collection points will include patient demographics, performance status, disease-related information (WBC, Blast %, Cytogenetics, Molecular markers, etc.), clinical outcomes (Induction response, time to achieve response, duration of response, etc.), and toxicities. Overall response rate (ORR) includes complete remission (CR = ANC ≥ 109/L, PLT ≥ 100 x 109/L, and Blasts ≤ 5%), CR with incomplete platelet recovery at 28 days (CRi), and partial response (PR = 50% decrease in marrow blasts with ≤ 25% remaining). Propensity score analysis will be performed on baseline demographics and disease characteristics to minimize bias between both cohorts. Dichotomous variables such as response rates and incidence of toxicities will be

analyzed using Fisher's exact test. Continuous outcomes will be measured from the date induction therapy started and will be compared using Student's t-test and Mann-Whitney U tests. Kaplan-Meier estimated of overall survival will be performed using the log-rank test and a cox proportional-hazards model.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-189

Poster Title: Evaluation of peak tobramycin concentrations associated with an initial dose of 3 mg/kg in critically ill patients

Primary Author: Nicholas Farina, University of Michigan Health System, MI; **Email:** nfarina@med.umich.edu

Additional Author (s):
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Purpose: Tobramycin is an aminoglycoside antibiotic utilized in critically ill, septic patients as empiric coverage for gram negative pathogens. Bactericidal activity of tobramycin is optimized when peak concentrations of 8-10 times the minimum inhibitory concentration (MIC) are attained. However, critically ill patients demonstrate elevated volumes of distribution and common dosing strategies of tobramycin dosing have been shown to be ineffectual in consistently attaining peak values above 15 mcg/mL in this patient population. As a result, some clinicians at a large, academic institution utilize a tobramycin dose of 3 mg/kg using actual body weight to target tobramycin peak concentrations of 8-10 mcg/mL.

Methods: This is a retrospective, single center review of critically ill medical and surgical patients receiving empiric tobramycin therapy. After administration of an initial dose, two tobramycin levels were assessed to calculate an elimination rate constant. Using the elimination rate constant, the peak tobramycin level and volume of distribution will be determined. Patients will be included if they receive an initial dose of tobramycin at 3 ± 0.3 mg/kg using actual body weight. Exclusion criteria include cystic fibrosis, greater than 20% body surface area burns, previous tobramycin administration during admission, use of intermittent hemodialysis, initiation of continuous renal replacement therapy between procurement of tobramycin levels, failure to achieve an initial tobramycin level within four hours following dose administration, and failure to obtain two tobramycin levels. The primary outcome is percentage of patients achieving a goal tobramycin peak level of 8-12 mcg/mL. Secondary outcomes include identification of risk factors associated with tobramycin volumes of distribution ≥ 0.4 L/kg. Goal study enrollment is 250 patients. Statistical analysis will be conducted using

descriptive statistics and Chi-Square test. Patient demographics including age, weight, sex, height, and ideal body weight will be collected. Factors affecting volume of distribution that will be assessed also include sepsis, heart failure, hepatic failure, renal failure, use of continuous renal replacement therapy, use of extracorporeal membrane oxygenation, vasopressor requirement, and inotrope requirement.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-190

Poster Title: Risk factors for clofarabine hepatotoxicity in patients with acute leukemia

Primary Author: Allie Snoke, University of Michigan Health System, MI; **Email:** asnoke@med.umich.edu

Additional Author (s):
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Purpose: Currently there is limited data examining risk factors for clofarabine hepatotoxicity. The objective of this study is to identify risk factors for clofarabine hepatotoxicity in order to optimize therapy in acute leukemia patients. This will result in avoidance of severe treatment-related morbidity and mortality and ultimately improve clinical outcomes in this high-risk patient population.

Methods: Patients with AML or ALL who are at least 18 years of age and received clofarabine chemotherapy at UMHS for remission induction
between January 2010 and September 2016 will be included in this study. Patient's with incomplete medical records will be excluded. The primary outcome will be the proportion of patients that developed hepatotoxicity. Secondary outcomes will include complete remission rate, event free survival, overall survival, and proportion of patients able to receive subsequent consolidative chemotherapy or allogeneic stem cell transplant. The following data will be collected: demographic (age, gender, weight, BSA, type of leukemia), laboratory (Scr, LDH, AST/ALT, bilirubin, alkaline phosphatase, albumin, INR, aPTT, CBC), other (dose of clofarabine, current chemotherapy regimen, stem cell transplant history, concomitant hepatotoxic drugs). Patients will then be divided into two groups: those with clofarabine hepatotoxicity and those without. Hepatotoxicity grading will be defined by the common terminology criteria for adverse events (CTCAE) developed by the National Cancer Institute. Multivariate analysis will then be conducted to determine if specific risk factors significantly affect the risk of developing hepatotoxicity with clofarabine therapy.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-191

Poster Title: Use of LACE score as a predictor of unplanned hospital readmission or death in palliative care patients

Primary Author: David Dadiomov, University of Michigan Health System, MI; **Email:** ddadiomo@umich.edu

Additional Author (s):
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Purpose: The LACE score is a tool used to predict unplanned hospital readmission or death within 30 days of hospital discharge. The tool has been validated in medical and surgical patients; however, palliative care patients likely have a higher baseline LACE scores due to comorbid conditions, which may limit the predictive value of the score. The objective of this study is to evaluate the utility of the LACE score in the palliative care population to drive resource utilization to highest risk patients.

Methods: The study will be a single-center retrospective cohort design. Palliative care patients will be identified by their consultation to the inpatient palliative care team and assessed to determine their LACE score. Data collected will include, but is not limited to: Length of stay, acuity of admission, Charlson comorbidity index, emergency department use, medications at discharge, insurance coverage/utilization. The primary outcome assessed is unplanned hospital readmission or death within 30 days of discharge. The outcome will be evaluated against the predictive value of the LACE score using logistic regression analysis. Other criteria will be assessed alongside the LACE score to determine whether other clinical characteristics correlate more closely with outcomes.

Results: n/a

Conclusion: n/a

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-192

Poster Title: Establishing a drug intensity index (DI2) to track and project future drug expenses

Primary Author: Casey Spitzer, University of Michigan Health System, MI; **Email:** cspitzer@med.umich.edu

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Purpose: Inpatient medication expenses continually rise and it's challenging for pharmacy management to proactively predict medication expenses. Different models have been generated to predict medication expenses. However, actual costs can vary from 25 to 374% from the predicted costs demonstrating a need to develop a more accurate model. The purpose of this project is to develop and validate an innovative DI2 model that more accurately forecasts pharmacy drug expenses and variations by using predictive analytics. A new pharmacy-specific drug expense predication model will help UMHS understand drug expenses and predicts the implications of changing population demographics when budgeting and explaining variances.

Methods: This study has been submitted for approval to the University of Michigan institutional review board. The training sample population includes patients discharged over a two-year time period from July 2014 through June 2016. Inpatient medication cost data will be extracted from the patients' electronic medical record along with the assigned diagnosis related group (DRG), total number of doses administered, age, and other patient specific demographic data. A predictive model will be assessed using multivariable linear regression in an effort to correlate total medication costs with the aforementioned independent variables to predict total medication cost for a six-month test sample population. To account for drug cost variation and inflation over the two-year period, we adjust costs utilizing the percentage change of prescription drug expenditures from the AJHP National trends in prescription drug expenditures and projections for 2016. Utilizing the regression model, we will use the independent variables from the training sample with adjustments representative of health system and demographic forecasts to predict the total medication expenses for a six-month period. An evaluation assessing our prediction of medication expenses and actual medication expenses data will be compared to validate our model.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-193

Poster Title: Outcomes in the Treatment of Secondary Acute Myeloid Leukemia: A Comparison of High-dose Cytarabine-based Regimens vs. Other Induction Strategies

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Purpose: Treatment outcomes in secondary acute myeloid leukemia (sAML) are poor, as patients respond poorly to conventional chemotherapy and frequently experience treatment-related morbidity and mortality. Despite the dismal prognosis, progress has been stagnant. The standard of care for sAML remains the same as de novo AML, which consists of an anthracycline plus cytarabine (3 + 7). There is currently no literature comparing various induction regimens and no evidence to suggest that outcomes can be improved beyond 3+7. The purpose of this study is to compare the complete remission rates of high-dose cytarabine-based regimens to other regimens in the induction of sAML.

Methods: A retrospective study will be conducted in adult patients with sAML who were treated with various induction chemotherapy regimens at the University of Michigan Health System from January 2009 to September 2016. Data to be collected include baseline demographic and clinical characteristics, induction chemotherapy regimen received, response rate (complete remission + incomplete remission), treatment-related toxicities, incidence of infection, hospital length of stay, intensive care unit (ICU) admission, ICU length of stay, disease progression, and mortality. Propensity score matching will be utilized to estimate the effect of treatment on obtaining a complete remission. Chi-square and Fisher exact tests will assess differences in baseline patient characteristics. Furthermore, time-to-event analyses for the secondary endpoints, including event-free survival, progression-free survival, and overall survival, will be performed using the Kaplan Meier method. This study has been submitted to the University of Michigan Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-194

Poster Title: Evaluation of a multidisciplinary transitions of care service on readmission rates in a geriatric patient-centered medical home

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Purpose: The Turner Geriatric Clinic is a patient-centered medical home (PCMH) at the University of Michigan Health System. A transitions of care (TOC) service, staffed by a multidisciplinary team composed of nurse navigators, clinical pharmacists, and board certified geriatric medicine physicians and nurse practitioners aims to improve patient outcomes for older adults recently discharged from the hospital setting. A previous study documented reduced readmission rates among patients who received the service. Since then, several processes have changed; this study aims to evaluate the effect of the current TOC service on readmission rates in the geriatric population.

Methods: This is a single-center retrospective cohort study of adults age 60 years or older discharged from an inpatient stay at University of Michigan Hospital (UH). Patients discharged from UH, including inpatient, emergency department, observation, and short-stay units, between 7/1/2013–2/21/2016, will be included in our study. Patients who received the TOC service at the Turner Geriatric Clinic will be compared to patients who received standard care at other PCMH sites. Patients must have an established primary care provider (PCP), defined as a completed PCP visit within 2 years prior to the index hospitalization date, which will be the first hospitalization meeting inclusion criteria during the study period. Patients will be excluded if they are discharged to sub-acute rehabilitation or nursing home facilities, as data from these institutions will not be reliably available to collect. Additionally, patients will be excluded if they are admitted for a planned procedure. Based on the results of a previous iteration of this clinic model, we will need a population of 1120 patients for 90% power. All-cause 14, 30, and 90-day readmission rates between propensity score matched study groups will be evaluated by

intention-to-treat, per protocol, and as-treated methods. Data will be analyzed using descriptive statistics, univariate, and multivariate analyses. The multivariate analyses will be performed by logistic regression and will include a Cox proportional hazards survival regression on time to readmission.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 11-195

Poster Title: Assessment of documented interventions in a required inpatient generalist advanced pharmacy practice experience (APPE) program at an academic medical center.

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Purpose: Training student pharmacists requires significant time investment by preceptors. However, student pharmacists may contribute to productivity and patient care by incorporating them into pharmacy practice models under pharmacist supervision. A required inpatient generalist APPE rotation was developed to provide educational experience while incorporating student pharmacists into the practice model to support pharmacists' services. Limited data exist quantifying the benefit student pharmacists have on the overall provision and documentation of pharmacists' services. The objective of this study is to assess the impact on the documentation of interventions and patient care when incorporating student pharmacists into a generalist pharmacist APPE rotation.

Methods: This is a retrospective, observational study conducted at the University of Michigan Hospitals and Health Centers. Generalist Pharmacists who served as preceptors for a 5-week APPE rotation were identified. The total number of documented patient care notes and interventions for each pharmacist will be evaluated during two randomly-selected 5-week time periods: when the pharmacist served as a preceptor for a 4th-year pharmacy student and when they were not serving as a preceptor. The primary outcome will be the average number of documented notes and interventions made per pharmacist while serving as a preceptor for a 5-week time period compared to the average number documented notes and interventions for a 5-week time period when pharmacists were not serving as preceptors. Secondary outcomes will include the number and type of patient care interventions documented by clinical pharmacist generalists while serving as a preceptor (pharmacist + APPE student) compared to a similar time frame when not serving as a preceptor (pharmacist alone). Continuous variables will be compared using a paired Students t-test (normally-distributed data) or Mann-Whitney U (non-

parametric data). Ordinal variables will be compared using Chi-square or Fisher's Exact test. Statistical significance will be considered at a p-value of < 0.05.

Results: NA

Conclusion: NA

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-196

Poster Title: Effectiveness of a pharmacist population health intervention for newer medications in cardiology

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Purpose: Health systems struggle to integrate new medications into clinical practice despite updated guideline recommendations. Amongst providers at the University of Michigan Health System, there is a discrepancy between new drug approval and uptake resulting in a reduced number of patients receiving life-saving medications. Notably, previous literature demonstrates higher prescribing rates by providers after contact with a pharmaceutical representative or after obtaining drug information from an external source. This study aims to evaluate the effectiveness of an Electronic Medical Record, pharmacist-based, population health intervention on physician prescribing patterns for newer cardiology medications in patients at the Internal and Family Medicine clinics.

Methods: This is a prospective, cluster-randomized controlled study. Patients seen by providers at the Internal and Family Medicine clinics at UMHS between 11/1/2016 and 10/31/2017 will be included. There will be an intervention and a control group, with five clinics included in each group. Within the intervention group, study personnel will screen patients that meet criteria for the study medications by implementing filters within the EMR and ensuring patients meet practice-based guideline criteria for new drug treatments. Intervention notifications will be sent by a pharmacist to providers of eligible patients two-weeks prior to a clinic visit. Intervention notifications will include pertinent patient-specific medication and insurance coverage information. The primary endpoint for this study is the proportion of patients prescribed one of the four study drugs, ivabradine, sacubitril/valsartan, evolocumab, or alirocumab, within three months of the intervention. A logistic regression will be performed to determine whether there

is an association between the intervention and new drug uptake. A p-value ≤ 0.05 will be considered statistically significant. Descriptive statistics will be performed and presented as mean +/- standard deviation for continuous and frequency data, with percent representing categorical data. A chi-square test will be used for evaluation of categorical data and a 2-sided student's t-test will be used to analyze outcomes between groups with and without the use the intervention.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-197

Poster Title: Predictors for requiring re-induction chemotherapy in acute myeloid leukemia patients with residual disease on day 14 bone marrow assessment

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Purpose: Following 3+7 induction chemotherapy in AML, the National Comprehensive Cancer Network and European LeukemiaNet recommend performing a bone marrow biopsy around day 14 to assess treatment response. For patients with inadequate blast reduction (blasts >5-10%), a second course of chemotherapy is immediately recommended. Given the poor predictive value of day 14 bone marrow assessment, many patients are not immediately re-induced and still achieve complete remission without further therapy. The objective of this study is to optimize the predictability of a day 14 bone marrow assessment by identifying risk factors for failure to achieve CR in patients receiving 3+7 induction chemotherapy.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients with AML who have undergone 3+7 induction chemotherapy at the University of Michigan Health System from January 2011 until September 2016 will be screened for inclusion in this study using the electronic medical record and leukemia database. Patients with positive bone marrow biopsies on day 14 (defined as >5% blasts) who do not undergo re-induction chemotherapy based on this day 14 bone marrow biopsy result will be identified. These patients will then be divided into two cohorts based on whether or not complete remission was achieved upon count recovery (CR and No-CR cohorts). The following data will be collected: patient age, gender, type of AML (de novo, treatment related, secondary to an antecedent hematologic disorder), WBC count at presentation, anthracycline dose, cytogenetics and microarray results, molecular mutations, bone marrow blast percentage at diagnosis and on day 14, peripheral blood blast percentage at diagnosis, bone marrow cellularity at diagnosis and

on day 14, and LDH at diagnosis and on day 14. Rate of peripheral blast clearance will be calculated. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-198

Poster Title: Evaluation of clinical pharmacist services in a transitions of care program provided to high-risk patients

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Purpose: Hospital readmissions are costly and can lead to detrimental effects for both patients and their families. To prevent hospital readmissions, eligible highest-risk patients were scheduled for a post-discharge transition of care (TOC) comprehensive medication review (CMR) by ambulatory care pharmacists via telephone. The objectives of this study are: 1) to examine 30-day hospital readmission rates, 2) to describe the ambulatory care pharmacist-recommended interventions, and 3) to quantify the acceptance rate of these interventions by primary care providers in patients who participated in a CMR with an ambulatory care pharmacist.

Methods: The TOC program at our institution was implemented in February 2016 with multiple interventions to improve transitions of care following hospitalization. In the ambulatory care setting, these include a nurse navigator phone call, pharmacist CMR via telephone, and post-discharge primary care follow-up visit. Eligible patients were identified using the validated LACE risk stratification tool, which is utilized to prospectively identify patients that are at risk for readmission or death within 30 days of discharge. The ambulatory care pharmacist service was available to University of Michigan Health System highest-risk (LACE score ≥ 13) patients discharged from inpatient general or family medicine services. Of the eligible patients, approximately half were scheduled for the CMR service. During their phone call, pharmacists reviewed medications, reconciled current medications against those prescribed prior to admission and at hospital discharge, identified actual and potential drug therapy problems, and documented recommendations in the electronic medical record for the provider's review at the follow-up visit. Readmission rates between the group that received the pharmacist CMR service

and the group that was not scheduled to receive the service will be compared. This study will be submitted to the Institutional Review Board for approval. All data, including demographics, readmissions information, recommended interventions and provider acceptance rates will be collected via retrospective chart review and readmissions claims data. Descriptive statistics and multivariable analyses will be utilized.

Results: N/a

Conclusion: N/a

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-199

Poster Title: Evaluation of the frequency of dispensing electronically discontinued medications and associated outcomes

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Purpose: With the implementation of electronic prescribing systems, prescription orders can be discontinued electronically and might not be appropriately relayed to the pharmacy. One study showed a 1.5% frequency of dispensing of electronically discontinued medications. This same study also identified the ten most frequently discontinued medications. Our study seeks to evaluate the frequency of dispensing of these ten medications within our outpatient pharmacies after the prescription has been electronically discontinued. This data will then be used to determine if there is a correlation with readmission rates.

Methods: Prescription data from three outpatient pharmacies will be analyzed to identify all new electronic prescriptions for lisinopril, hydrochlorothiazide, amlodipine, metoprolol, irbesartan, metformin, simvastatin, atenolol, enalapril, and warfarin that were filled for patients age 18 and older. Prescription data evaluated will include medication, dose, directions, date written, date dispensed, and date and time picked up. This data will then be compared to the electronic medical record to determine if the prescription was electronically discontinued before it was dispensed to the patient. Medical record data will include date and time of discontinuation, and reason for discontinuation, if documented. For all the prescriptions where the prescription was dispensed after being discontinued, a chart review will be performed to determine if there is a correlation between the cancelled dispensed medication and 30-day all cause readmission. All data will be documented without patient identifiers and stored securely.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-200

Poster Title: Epidemiology and outcomes of mild-to-moderately immunosuppressed patients with community-acquired pneumonia (CAP)

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Purpose: Numerous studies have identified immunosuppression as a risk factor for infections caused by multi-drug resistant organisms. However, this body of literature does not possess consistent criteria for defining immunosuppressed individuals and often focuses on high-levels of immunosuppressive conditions and therapies. Furthermore, the current guidelines for the treatment of CAP do not address the inpatient management of immunosuppressed patients. The objective of this study is to determine whether a difference exists between the epidemiology of CAP in mild-to-moderately immunosuppressed patients as compared to immunocompetent patients with CAP, and determine if they take longer to reach clinical stability.

Methods: This multi-center, retrospective, cohort study will include patients admitted to a medical service with pneumonia between December 1, 2015 and November 30, 2016. Patients admitted to one of 10-pilot hospitals participating in the Michigan Hospital Medicine Safety (HMS) Consortium were included if they had an International Statistical Classification of Diseases and Related Health Problems (ICD) revision 10 discharge diagnosis for pneumonia. Subjects will be grouped into cohorts of either mild-to-moderately immunosuppressed or immunocompetent on the basis of our definition of mild-to-moderately immunosuppressed. Mild-to-moderately immunosuppressed will be defined by one or more of the following: greater than or equal to prednisone 15 milligrams, or the equivalent, for greater than 30-days; weekly methotrexate dose less than or equal to 30 milligrams; taking azathioprine; infected with Human Immunodeficiency Virus and CD4 count greater than or equal to 200; greater than

one-year post-kidney transplant without rejection; receiving a tumor necrosis factor inhibitor, including adalimumab, certolizumab, etanercept, golimumab, or infliximab; asplenia; active solid malignancy; or active leukemia with chemotherapy administered in the past 30-days. Infectious epidemiology will be evaluated through a comparison of CAP and non-CAP pathogens between immunocompetent and mild-to-moderately immunosuppressed patients, respectively. Time to clinical stability will be assessed as the primary clinical outcome between the two cohorts.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-201

Poster Title: Effect of a transitions of care medication coverage service on patient outcomes

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Purpose: Transitions of care is an increasingly important area of pharmacy practice. One example of transitions of care is a medication coverage service. These services work to decrease the significant medication barriers of cost and access. Our institutions' medication coverage assistance service started as a pilot project in 2011 and works to verify medication coverage before patient discharge. Since that time, the service has grown to include three technicians who complete copay checks, prior authorizations and provide access to copay assistance programs. Providers of patients prescribed medications with high copays or those commonly requiring prior authorizations initiate the service.

Methods: This is a single-center retrospective cohort study to determine the impact of a transitions of care medication coverage service. Our primary hypothesis is that patients have increased adherence and thus improved outcomes as a result of the transitions of care medication coverage service. We also hypothesize that patients receiving the program will have less 30-day and 60-day hospital readmissions, less provider follow-up time and smaller copay amounts. The rationale is to quantify the benefits of this program on patient care and allow better service expansion. Patients included will be those receiving dabigatran (Pradaxa), rivaroxaban (Xarelto), apixaban (Eliquis), edoxaban (Savaysa), enoxaparin (Lovenox), prasugrel (Effient), ticagrelor (Brilinta), sacubitril/valsartan (Entresto), ivabradine (Corlanor), or rosuvastatin (Crestor) for the first time during hospital admission and subsequently discharged on the medication between June 2014 and December 2016. The study will compare patients who received the transitions of care medication coverage service and those who did not for each of the study medications. Baseline characteristics, treatment intervention and outcomes data will be collected for each patient and analyzed. The objective of this study is to determine

the impact of a transitions of care medication coverage service on medication adherence, provider follow-up time, copay costs and hospital readmissions. The study will be approved by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 11-202

Poster Title: Implementing interventions to reduce the number of pharmacist order clarifications within the electronic health record (EHR)

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Purpose: Order clarifications are a typical and time consuming part of pharmacist workflow, despite implementation of computerized physician order entry, and continue to drain time from pharmacist clinical activities. At our health system, the number of monthly order clarifications logged by pharmacists within the electronic health record (EHR) (Epic Systems Inc., Verona, WI) are in the thousands. With such a significant number, this quality improvement effort aims to provide a more detailed analysis on what is contributing to order clarifications with the intention of implementing interventions targeting the source of these clarifications.

Methods: Phase 1: A three-month historical extract of pharmacist order clarification interventions will be obtained from the EHR. Number of order clarifications per medication will be plotted over time on a controlled pareto chart; which will allow us to identify the 20 percent of medications that make up 80 percent of order clarifications. Furthermore, number of order clarifications per medication will also be standardized against their relative number of medication orders. Thus producing a set of medications that cause the majority of order clarifications and a large portion of their respected orders.
Phase 2: A detailed subgroup analysis of order clarifications based on associated medication orders, associated patient characteristics, associated ordering user characteristics, and order clarification creator (pharmacist) characteristics will be performed to detect sources of variability and identify any common causes or special causes leading to increase in number of order clarifications. Based upon patterns identified through the subgroup analysis, it will be determined if interventions can be aimed at these scenarios within the EHR to have the greatest impact on reducing the requirements for order clarification.

Phase 3: These interventions will then be implemented sequentially in the EHR through a series of plan-do-study-act (PDSA) cycles. Statistical Process Control (SPC) methods will be used to determine the overall effect of each intervention in relationship to each intervention and on the total number of clarifications.

Results: Research in Progress

Conclusion: Research in Progress

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-203

Poster Title: Evaluating whole genome sequencing for diagnosis of meningitis and encephalitis, and implications for antibiotic management

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Purpose: Multiple studies have demonstrated the low culture positivity rate of cerebrospinal fluid (CSF) samples and the need for improved diagnostic techniques for central nervous system (CNS) infections. Recent literature has confirmed that whole genome sequencing (WGS) is a novel diagnostic tool for patients with suspected CNS infections, yet utilized invasive methods of brain or spinal cord biopsies. In our proposed research, we aim to further investigate the utility of WGS by utilizing non-invasive CSF samples, and to determine the sensitivity and specificity of WGS.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a single center observational comparative study that has been designed to evaluate the utility of WGS in the diagnosis of CNS infections. CSF samples will be collected from the microbiology lab from patients with suspected CNS infections who underwent a lumbar puncture (LP). Sample collection will occur from December 2016 to February 2017 and analysis will occur in March 2017. We will perform WGS on these CSF samples in order to evaluate the sensitivity and specificity of WGS compared to traditional diagnostic methods. Confirmatory testing through real-time PCR will be performed for patients with negative results by traditional methods and positive results by WGS. In addition, we will determine whether the results of WGS could have altered antimicrobial therapy and influenced clinical outcomes if it was performed in real time. Secondary outcomes to be evaluated will include time to optimal therapy, antibiotic utilization past 48 hours, as well as microbiologic resource utilization and cost.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-204

Poster Title: Implementation of a step-wise, multi-layered education and intervention approach to reduce the use of restricted antimicrobials and improve patient outcomes

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Purpose: Clostridium difficile infection (CDI) is a hospital-acquired infection that increases morbidity and healthcare-related costs. Antimicrobial use, especially third-generation cephalosporins, clindamycin, and fluoroquinolones, is a major risk factor for CDI. Previous literature has demonstrated the ability of pharmacists to increase adherence to antimicrobial treatment bundles with antimicrobial stewardship oversight. However, limited data exists evaluating the impact of a multi-tiered stewardship initiative involving an entire pharmacy department. The objective of this study is to evaluate the effect of a step-wise, multi-layered education and intervention model that will provide initial coaching and consistent feedback on use of restricted antimicrobials and patient outcomes.

Methods: This is a pre-post, quasi-experimental, single-center study comparing a 6-month historical control period and 20-month intervention period comprised of three distinct phases. Phase 1 consists of passive intervention with treatment guideline updates made by the antimicrobial stewardship team (AST). Phase 2 consists of pharmacist intervention with prospective AST oversight and feedback in addition to monthly automated reports with clinical outcomes and antimicrobial utilization data. Phase 3 consists of pharmacist interventions with only automated monthly reports and no direct AST oversight. During, the historical control period, clinical pharmacists ensured appropriate use of select antimicrobials with limited AST oversight. Adult (>18 years) patients who were admitted from January 2015 through May 2017 to an inpatient service were included if receipt of one of the following restricted antimicrobial agents occurred during hospitalization: fluoroquinolones, ceftriaxone, or clindamycin . The

primary outcome will be days of therapy on the restricted antimicrobial agent(s) per 1000 patient-days. Secondary outcomes include appropriate use of restricted antimicrobial agent(s), rate of hospital-acquired CDI, and incidence of antibiotic-associated CDI. Data to be collected includes antibiotic indication, culture(s) (including organism and source), current restricted antimicrobial agent(s) (start date, discontinuation date, appropriateness), and allergies. Appropriate descriptive statistics will be utilized to analyze these data.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-205

Poster Title: Evaluation of the impact of duration of antibiotics for the treatment of symptomatic lower urinary tract infections in kidney transplant recipients

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Purpose: The American Society of Transplantation (AST) published guidance on diagnosis and treatment of UTIs; however the optimal duration remains unclear. The current recommendation ranges from 5 to 14 days for cystitis, which is longer than the recommendation set by the Infectious Diseases Society of America. Additionally, it has been recommended by some to treat mild cases of cystitis for 7-10 days within the first 6 months of transplant. Therefore, the primary objective of this study is to evaluate the impact of antibiotic duration on recurrence of symptomatic lower urinary tract infections and incidence of pyelonephritis.

Methods: Single-center retrospective chart review of adult renal transplant recipients from the University of Michigan Health System who received antibiotic treatment for symptomatic lower urinary tract infections. Patients transplanted between January 2009 and December 2015 will be included for analysis. Patients with symptomatic lower urinary tract infections from time to ureteral stent removal to three months after renal transplant will be included for analysis. Symptomatic lower urinary tract infection will be defined as a positive urine culture in addition to the presence of at least one urinary symptom (dysuria, urinary urgency/frequency, or suprapubic pain). Patients will be grouped into cohorts on the basis of duration of antibiotic treatment (≤7 days or >7 days), and groups will be matched 1:1 based on antibiotic agent/class used.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-206

Poster Title: Measuring hepatitis C virus (HCV) drug treatment adherence in patients that use intravenous drugs

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Purpose: Newer therapies for HCV are more effective and better tolerated compared to peginterferon and ribavirin. Current HCV guidelines recommend treating all patients with a history of intravenous drug abuse (IVDA). However, many payers are reluctant to pay for HCV therapy in such patients. In studies of HCV treatments containing peginterferon and ribavirin, adherence and efficacy rates did not differ significantly between patients who used injection drugs and patients who didn't. The purpose of this study is to determine whether adherence to current HCV treatment differs between patients with a history of IVDA compared to patients without a history of IVDA.

Methods: This study will be submitted to our institutional review board for approval. This study will be a retrospective cohort study comparing patients with a history of IVDA to patients without this history. Patients who completed HCV treatment with a direct acting agent regimen at the University of Michigan Health System between September 1, 2015 to September 30, 2016 will be included. Patients with HIV co-infection or liver transplantation will be excluded. The following data will be collected: patient age, gender, ethnicity, HCV medication used, treatment duration, medication refill dates, and sustained virological response (SVR) rate. Among patients with a history of IVDA, IVDA treatment used will be collected. The primary endpoint will be HCV treatment adherence defined as proportion of days covered (PDC). The secondary endpoint will be treatment effectiveness defined as SVR. Among patients with a history of IVDA, the comparator groups of patients who did or did not receive addiction treatment will be examined as a subgroup analysis.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-207

Poster Title: Compliance with the ACC/AHA 2013 guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults

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Purpose: The objective of this study is to determine whether patients admitted to CHI St. Alexius Health with acute coronary syndrome were on the proper dose of a statin medication, according to the 2013 American College of Cardiology/American Heart Association (ACC/AHA) guideline on the treatment of blood cholesterol to reduce atherosclerotic cardiovascular risk in adults, prior to admission and on discharge from the hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients who were admitted to the hospital with a diagnosis of acute coronary syndrome will be identified using the electronic medical record system. The following data will be collected: patient age, gender, ethnicity, lipid panel results, current cholesterol medications, allergies, vital signs on admission, past medical history, and tobacco use history. Provider documentation will be reviewed to determine potential reasons for noncompliance to the ACC/AHA guideline. All data will be recorded without patient identifiers and be maintained confidentially. Based on patient data, statin dosing prior to admission and upon discharge will be compared to the ACC/AHA guideline to determine compliance.

Results: N/A

Conclusion: N/A

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 11-208

Poster Title: Vancomycin protocol evaluation in patients with sepsis

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Mayer Dawn

Purpose: Due to the severity of complications associated with sepsis, early optimization of antimicrobial therapy is imperative. Literature regarding alternative dosing strategies for vancomycin in patients with sepsis has recently been published. The objective of this study is to evaluate the efficacy of CHI St. Alexius Health's current vancomycin dosing guidelines to achieve therapeutic trough concentrations in this patient population.

Methods: This study will be submitted to the Institutional Review Board for approval. It will consist of a single-center, retrospective chart review including patients 18 years of age or older admitted October 1, 2015 through October 1, 2016, being treated for sepsis, with a consult to pharmacy to manage vancomycin and one trough concentration at steady state. Exclusion criteria consist of pediatric patients, end-stage renal disease patients receiving hemodialysis or peritoneal dialysis, patients with unstable renal function, and perioperative vancomycin doses. The following data will be collected: patient age, gender, height, weight, body mass index, ethnicity, serum creatinine, blood urea nitrogen, creatinine clearance, blood culture results, vancomycin loading dose, lab draw time, doses in mg per/kg, concurrent antibiotics, white blood cell count, platelet count, and neutrophil percentage. Patients will be evaluated to determine if vancomycin trough levels were subtherapeutic, therapeutic, or supratherapeutic.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-209

Poster Title: Pharmacy neonatal intensive care unit (NICU) discharge education program

Primary Author: Sydney Johnk, Sanford Medical Center Fargo, ND; **Email:** sydney.johnk@sanfordhealth.org

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Purpose: Caregivers of Neonatal Intensive Care Unit (NICU) patients have a multitude of responsibilities upon discharge. In order to comprehend medical information at discharge, health literacy must be addressed. A study on baseline health literacy showed that one in three parents of NICU infants had suspected limited health literacy. Administration technique can be difficult, as improper use of standardized dosing tools can lead to incorrect dosing. Individualized patient counseling, utilizing hand-outs and teaching tools, can improve child outcomes. The objective of this study is to assess caregiver health literacy and medication understanding with a pharmacy discharge education program.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will be divided into a pre- and post-implementation phase of 10-12 weeks each. Caregivers of patients who are discharging from the Neonatal Intensive Care Unit (NICU) will be identified for participation during discharge rounds for both phases. Demographic information collected from participants will include sex, age, race, total household income, employment status, and education level. The medication list of the NICU patient will be accessed. To assess medication education knowledge, medication education satisfaction, and overall health literacy; a questionnaire will be utilized. This will consist of the validated Parental Health Literacy Assessment Tool (PHLAT) and a question regarding caregiver medication education satisfaction. The first phase will consist of assessment based on current discharge education processes that involve nursing alone. Pharmacy discharge counseling will begin in the second phase of the study, and will include medication use while breastfeeding, correct usage of a medication syringe, patient specific medication counseling, and a dosing schedule for the caregiver. Counseling will consist of visual, oral, and written education materials. Questionnaire results

from both phases will be compared to assess changes in health literacy, medication understanding, and satisfaction.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-210

Poster Title: Effect of an ambulatory electronic health record (EHR) alert on inappropriate antibiotic prescribing for sinusitis and otitis media

Primary Author: Megan Hansen, Sanford Medical Center Fargo, ND; **Email:** megan.hansen@sanfordhealth.org

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Purpose: Recent studies have shown that sinusitis and otitis media are diagnoses that generate the most antibiotic prescriptions among ambulatory care visits in the United States. An EHR alert was created based on the American Academy of Family Physicians Choosing Wisely initiative to alert physicians regarding potentially inappropriate antibiotic use for sinusitis and otitis media. This initiative recommends a period of watchful waiting in otitis media and discourages routine prescribing of antibiotics in non-severe sinusitis. The objective of this study is to assess the effects of an EHR alert on antibiotic prescribing during ambulatory care visits for sinusitis and otitis media.

Methods: This study is pending Institutional Review Board approval. Data will be collected retrospectively for clinic visits that result in a diagnosis of sinusitis or otitis media. Patients meeting the following criteria will be included: patients with a clinic visit diagnosis of otitis media and between the ages of 2 to 12 years or a diagnosis of sinusitis. This data will be collected on patients seen within any clinic under Sanford Health during 10/25/15-3/25/16 as the control group and 10/25/16-3/25/17 as the intervention group. The primary outcome is to measure the impact of the EHR alert on antibiotic prescribing for sinusitis and otitis media based on the change in the pre-intervention to post-intervention periods. The primary safety outcome will be to assess return visits within 30 days due to complications. This outcome will look at complications due to prescribing antibiotics, such as Clostridium difficile diarrhea, and complications due to withholding antibiotics, such as mastoiditis or pneumonia. Patients will be excluded if they have a concurrent diagnosis warranting antibiotic therapy. Additionally they will be excluded if they are immunocompromised, or have conditions such as chronic lung

disease. If a patient was diagnosed with a bacterial or respiratory tract infection within the past 30 days they will also be excluded from the study.

Results: n/a

Conclusion: n/a

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-211

Poster Title: Effectiveness of umeclidinium-vilanterol for protocolized management of chronic obstructive pulmonary disease (COPD) exacerbation in hospitalized patients: A sequential period analysis

Primary Author: Todd Chapin, Sanford Medical Center Fargo, ND; **Email:** todd.chapin@sanfordhealth.org

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Purpose: COPD affects 5% of the population and is characterized by persistent airflow limitations and progressive inflammatory airway response. Inhaled medications can prevent and treat COPD exacerbations and are a cornerstone of therapy, although they are often associated with multiple doses per day and significant expense. Burdens of optimized management are counterbalanced by the benefits of improved lung function, reduced exacerbation frequency, and prolonged survival. This study will evaluate whether a once-daily anticholinergic and long acting beta agonist combination is effective within a COPD exacerbation management protocol for hospitalized patients compared to historical controls managed with twice daily formoterol plus tiotropium.

Methods: We will conduct a retrospective sequential period analysis comparing 30-day readmission rates in hospitalized patients with COPD exacerbations before and after protocolized use of once-daily umeclidinium-vilanterol. All index admissions for patients admitted to our hospital with COPD exacerbations during the pre-intervention period (September 2015 through February 2016) and post-intervention period (April 2016 through September 2016) will be eligible for inclusion. Patients who are deemed unable to use oral inhalers according to inspiratory flow measurement will be excluded. COPD treatment at our hospital utilizes a respiratory therapist managed, algorithm-based protocol, in which twice-daily formoterol plus daily tiotropium was replaced with once-daily umeclidinium/vilanterol in March 2016. The primary outcome will be 30-day readmission rate, and secondary outcomes will include hospital length of stay and mortality. We will collect the following additional information for each patient: age, sex, body weight, body mass index, smoking status within the

last 12 months, outpatient medications used for COPD treatment, Global Initiative for Chronic Obstructive Lung Disease classification, pulmonary function test results, and concurrent treatment of exacerbation with antibiotics or glucocorticoids. Chi squared tests and t-tests will be used for statistical analysis of categorical variables and continuous variables, respectively. This study will be submitted to and approved by our institutional review board prior to commencing chart review.

Results: n/a

Conclusion: n/a

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-212

Poster Title: Ticagrelor versus clopidogrel for neurointerventional procedures: a case control study

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Purpose: In neurointerventional procedures, dual antiplatelet therapy with aspirin and a P2Y12 receptor antagonist is often used to prevent thrombotic complications when vascular stents are placed. However, differences in clinical outcome between P2Y12 agents selected in this setting remain unknown. Although most of the published experience is with clopidogrel, ticagrelor may be a reasonable alternative, most notably in patients who may be considered non-responders to clopidogrel. The objective of this study is to retrospectively compare the efficacy and safety of ticagrelor versus clopidogrel in the setting of isolated neurointerventional procedure.

Methods: Patients who were prescribed a P2Y12 medication and underwent a neurointerventional procedure will be considered for inclusion in our study. Patients who received ticagrelor will be matched to a patient who received clopidogrel by age, gender, and type of procedure according to the IRB approved protocol. The following data will be collected: sex, age, race, weight, body mass index, aneurysm location, aneurysm size, national institute of health stroke score, endovascular technique (extracranial or intracranial), vascular access (femoral or radial), hemorrhagic complications, thrombotic complications, death and time to hemorrhagic, thrombotic complication or death and baseline co-morbidities. If available, results of platelet reactivity units, whether patient is a non-responder to clopidogrel, Hunt-Hess scores, and Modified Rankin scores will be collected. The primary endpoint will be any hemorrhagic complication. Secondary endpoints will include thrombotic events and a 30-day composite endpoint of hemorrhagic complications, thrombotic events and mortality. The definition of hemorrhagic complications used in this study will be intracranial hemorrhage, computerized technology of abdomen and pelvis and femoral access site bleeding documented in the

electronic medical record by clinical note or ultrasound. The definition of thrombotic event used in this study will be post-operative stroke or stroke recurrence shown on follow-up magnetic resonance imaging that is different from prior stroke or cerebral angiography. Chi square or fisher exact tests will be used for categorical and continuous data, respectively.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-213

Poster Title: Evaluating the characteristics and outcomes of infants before and after implementation of a standardized treatment protocol for neonatal abstinence syndrome: A quality improvement project

Primary Author: Siera Zimmerman, Trinity Hospitals, ND; **Email:** siera.k.zimmerman@gmail.com

Additional Author (s):

Purpose: The objective is to compare primary and secondary outcomes of babies treated with a standardized treatment protocol for neonatal abstinence syndrome (NAS) versus babies treated prior to the protocol. NAS occurs in neonates exposed to addictive substances while in-utero. The substances are immediately discontinued at birth, leading to withdrawal. Symptoms include irritability, seizures, neurodevelopmental abnormalities, and can be life-threatening. Nationally, NAS has been on the rise; incidence averages from 0.339% of all births to 2.7% of NICU admissions. Current statistics suggest Trinity Hospital's incidence could be up to 6.4%, though this has not been formally evaluated.

Methods: The study will be approved by the IRB prior to data collection. The Vermont-Oxford Database, Burlington, VT will be used to identify patients who meet inclusion criteria. Inclusion criteria include workup or diagnosis for NAS. The exclusion criteria are babies with no diagnosis or workup for NAS. Patient charts will be reviewed retrospectively with data collection from January 2012 to September 2016 (prior to protocol- arm one) and October 2016 to May 2017 (post protocol implementation- arm two). Primary outcomes include length of stay, infant discharge disposition, and symptom control recorded as Finnegan score. Secondary objectives include patient demographics: birth weight, APGAR score, gestational age, sex, delivery type, age at treatment, age at discharge; parent demographics: age, gravidity, parity, prenatal care history, drugs (opioids, antidepressants, psychotropics, anti-seizure, or other medications) or substances (illicit drugs, alcohol, nicotine, or others) used during or prior to pregnancy, ethnicity, highest education achieved; breastfeeding status; symptoms experienced; non-pharmacological treatments; medications administered and side effects; length of treatment; and hospital cost. Provider and nurse documentation will be used when gathering data. All of

the data collected will be de-identified and kept confidential. The data for each arm will be averaged and compared.

Results: N/a

Conclusion: N/a

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-214

Poster Title: Anticoagulation use in patients with atrial fibrillation and end stage renal disease receiving hemodialysis

Primary Author: Dallin Darais, CHI Health – Bergan Mercy Medical Center, NE; **Email:** dallindarais@creighton.edu

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Purpose: Warfarin has been the drug of choice to prevent stroke or systemic embolism for patients with nonvalvular atrial fibrillation (AF) in end-stage renal disease (ESRD) on hemodialysis. Anticoagulant therapy has evolved due to the development of direct thrombin and factor Xa inhibitors, leading to additional therapeutic options for use in these patients. As these patterns are not well-described, the objective of this study is to identify prescribing patterns of anticoagulation agents in AF patients with ESRD on hemodialysis. Secondary outcomes include the incidence of stroke or thromboembolic events, and the incidence of major or minor bleeding events.

Methods: This will be a multicenter, retrospective, chart review, cohort study evaluating patients with ESRD on hemodialysis diagnosed with nonvalvular AF who are receiving anticoagulation (warfarin, dabigatran, rivaroxaban, apixaban, and edoxaban). This population will be identified by International Classification of Disease (ICD)-9 and ICD-10 codes between April 30, 2010 and April 30, 2016. Inclusion criteria are: patients 19 years of age and older, with concurrent diagnoses of AF and ESRD, and are on chronic and stable hemodialysis. The following patient data will be collected: age, gender, race/ethnicity, weight, body mass index, serum creatinine, creatinine clearance based off Cockcroft-Gault equation, hemodialysis schedule, hemodialysis location, and CHA2DS2-VASc score. The following data will be collected about each patients' anticoagulation therapy: initial anticoagulant, dose, subsequent changes to anticoagulation or other dose adjustments, and international normalized ratio if on warfarin. Adverse event data will be collected for hemorrhagic or ischemic stroke, and both major and minor bleeding events. Prevalence plots will be used to describe point prevalence (monthly) of anticoagulant agent use and standardizing it with the study population. Comparisons of patient outcomes based off anticoagulation use will be assessed using chi square test or Fisher's exact

test. Continuous variables will be analyzed by Student's t test or analysis of variance (ANOVA). A p-value of less than or equal to 0.05 will be considered significant.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-215

Poster Title: Retrospective analysis of pirfenidone in pulmonary fibrosis patients

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Purpose: Idiopathic pulmonary fibrosis is a chronic fibrosing interstitial pneumonia with no known cause. The median survival after being diagnosed is just two to three years. Until recently, there have been no FDA-approved treatments available for pulmonary fibrosis. The 2015 ATS/ERS/JRS/ALAT updated guidelines only recommend the use of two new antifibrotic drugs approved in 2014, pirfenidone and nintedanib. There is limited long-term published data available for the use of pirfenidone in pulmonary fibrosis treatment. The goal of this study is to use nearly five years of data at one university to evaluate long-term efficacy and safety of pirfenidone.

Methods: This study was approved by the university's Institutional Review Board. This retrospective analysis will identify patients who received pirfenidone therapy for pulmonary fibrosis treatment from 2011 to 2016 using consecutive patient records. The following data will be collected: patient demographics, comorbidities, creatinine clearance, length of pulmonary fibrosis diagnosis, smoking status, and environmental exposure risks. Additional information will be gathered regarding lung function at baseline and following pirfenidone treatment: forced vital capacity, forced expiratory volume in one second, diffusing capacity of the lungs for carbon monoxide, oxygen requirements, six-minute walk test, dyspnea score, frequency of exacerbations, time to exacerbation, time to death, and high-resolution computed tomography. Finally, variables relating to treatment with pirfenidone will be collected: day of treatment initiation, duration of treatment, daily dose, concurrent medications, adverse events reported, and therapeutic switch to nintedanib. All data will be recorded without patient identifiers and maintained confidentially. The primary endpoint for efficacy will be forced vital capacity and

death. Secondary endpoints will include six-minute walk distance, progression-free survival, dyspnea, and death from any cause or from pulmonary fibrosis. A secondary endpoint related to safety is the tolerability of pirfenidone therapy. The investigators will use descriptive statistics to summarize the efficacy and safety of pirfenidone therapy in pulmonary fibrosis patients.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-216

Poster Title: Evaluation of the management of extended spectrum beta-lactamase (ESBL) producing Enterobacteriaceae infections

Primary Author: Scott Shipley, CHI Health Creighton University Medical Center - Bergan Mercy, NE; **Email:** scott.shipley@alegent.org

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Purpose: ESBL-producing Enterobacteriaceae capable of hydrolyzing broad spectrum cephalosporins have become a dominant concern for anti-infective treatment worldwide. In 2013 the CDC categorized ESBL Enterobacteriaceae threat level as “serious”, estimating upwards of 40,000 dollars per patient in excess hospital costs for ESBL bloodstream infection. Carbapenem antimicrobials are the gold standard for treating ESBL-producing pathogens. The CDC recommends laboratory reporting all penicillins, cephalosporins, and monobactams as resistant to ESBL pathogens regardless of minimum inhibitory concentration. The purpose of this study is to assess definitive treatment regimens used within CHI Health Omaha and the appropriateness of the treatment based on patient outcomes.

Methods: This retrospective electronic medical record review will focus on patient outcomes of treating ESBL-producing bacteria throughout five Omaha metro hospitals. Patients enrolled will be greater than 19 years of age and have a positive inpatient culture at a CHI hospital between January 1, 2014 and December 21, 2015. These patients will be identified from the Microbiology Department of CHI health system. Patients will be excluded if there was inadequate follow-up within seven days of admission (death, hospice care, refusal of treatment, or transfer to an outside hospital). Outcomes will include appropriate empiric and definitive therapy (carbapenems will be recognized as appropriate), length of hospitalization, infectious disease consult, number of antimicrobial changes, and treatment failure. Treatment failure, defined as patients who do not respond to therapy (recurrent fever, abnormal white blood cell counts, positive blood cultures greater than 10 days after initial blood culture, but prior to completion of antimicrobial therapy, or death). Comparisons of patient outcomes between the different hospitals will be assessed using Chi-squared test or Fisher’s exact test for discrete variables and Student’s t test or analysis of variance for continuous variables. A P value of less

than 0.05 will be considered significant. This study is approved by Creighton University Institutional Review Board for Human Studies.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-217

Poster Title: Clinical significance of discordant empiric antimicrobial selection for inpatient treatment of pyelonephritis at two CHI Health Omaha metro area hospitals

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Purpose: The Infectious Diseases Society of America (IDSA) and European Association of Urology (EAU) guidelines suggest that appropriate empiric therapy for complicated urinary tract infections (UTI) include either fluoroquinolones or extended-spectrum cephalosporins, among others. These two evidence-based guidelines also suggest that if local resistance rates to fluoroquinolones exceed 10-20 percent, empiric therapy with an alternative agent should be considered. This study aims to determine local antimicrobial resistance rates and how empiric selection of discordant antimicrobial therapy affect outcomes in hospitalized patients with pyelonephritis.

Methods: This study is a retrospective electronic health record review (EHR) and will be approved by the Institutional Review Board. Non-pregnant patients 19 years and older with a diagnosis of pyelonephritis as determined by International Classification of Diseases (ICD)-10 codes and confirmed via review of the EHR from October 1, 2015 through September 30, 2016 will be included. Diagnosis of pyelonephritis will be confirmed with a urine culture containing at least 100,000 colony forming units per milliliter of a single Gram-negative pathogen and a temperature greater than or equal to 38.0 degrees Celsius in the presence of symptomatology describing “flank pain” or “costovertebral tenderness” as recorded in the EHR. Data collection will include patient demographics, comorbidities, urine cultures and sensitivities, and empiric antimicrobial selection. Discordant antimicrobial selection will be defined as empiric therapy to which the identified organism is resistant. The study will compare outcomes in patients receiving discordant empiric therapy to those receiving concordant empiric therapy at two hospitals. The primary objective of this study will be to determine if discordant empiric

antimicrobial selection had a detrimental impact on patient outcomes including length of hospitalization, time to clinical resolution of infection, and mortality. Descriptive statistics will be used on all discrete variables, student t-test will be used for continuous variables, and logistic regression will be used to identify risk factors associated with antimicrobial resistance.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-218

Poster Title: Analysis of midodrine to decrease the norepinephrine dosing requirements in intensive care unit patients

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Purpose: Intravenous (IV) norepinephrine (NE) is used to maintain tissue perfusion in hemodynamically unstable patients. IV NE administration requires invasive hemodynamic monitoring in the intensive care unit (ICU). The dose of IV NE is reduced as hemodynamic stability improves. Persistent hypotension requiring low rates of IV NE increase the ICU length of stay (LOS). Midodrine, an oral alpha agonist, is used adjunctively to facilitate IV NE discontinuation. There is limited evidence to support the use of midodrine for this indication. This study aims to evaluate the effect of midodrine on ICU LOS and duration of IV NE administration.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. This study will include patients 19 years or older who received IV NE while admitted to our ICU between September 2012 to September 2016. Patients will be divided into two groups for comparison: those who received midodrine and those who did not. Primary endpoints include ICU LOS and duration of IV NE administration. Patients will be excluded if they expire while receiving IV NE or if midodrine is used for an indication other than IV NE weaning. Baseline demographic variables to be collected include age, sex, comorbidities, ordering service, Acute Physiology and Chronic Health Evaluation (APACHE) II score, mechanical ventilation, ICU diagnosis, concomitant use of steroids, vasopressin and other vasopressors. Additional data to be collected include initial and maximum doses of midodrine, duration of IV NE prior to and after midodrine initiation, mean arterial pressure at time of midodrine initiation and IV NE discontinuation, IV NE rate at time of and 24 hours after midodrine initiation, time to

IV NE discontinuation and ICU discharge after midodrine initiation, time to ICU discharge after IV NE discontinuation and midodrine side effects. Descriptive statistics will be used to describe the study population. Chi-square and Mann-Whitney tests will be used to compare baseline characteristics. Negative binomial regression will be used to compare the endpoints between groups.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-219

Poster Title: Launching a pharmacy technician-led medication history service

Primary Author: Sasha Haarberg, CHI Health- St. Elizabeth, NE; **Email:** sashahaarberg@stez.org

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Purpose: Medication reconciliation is widely recognized as an essential tool used to decrease medication discrepancies with potential for patient harm and increased health care spending. An accurate, prior to admission medication list is critical in order to aid healthcare providers with the information needed to provide quality patient care. The primary focus of this study is to assess the effect the introduction of a pharmacy technician-led medication history program has on the accuracy of medication lists upon admission to a community hospital.

Methods: This is a prospective, process improvement study at a 260-bed community hospital. This medication history program specifically involves medication history technicians under the supervision of a pharmacist. These medication history technicians, after three months of training, will complete the medication history process using patient interviews, Nebraska Health Information Initiative (NEHII) database, outside facility records, patient pharmacy records, and provider office records. The medication history technicians will focus on three main paths of admission; emergency department, direct admissions, and scheduled orthopedic joint replacement surgeries. After compiling an accurate medication list, technicians will then present it to a pharmacist for review and then to the admitting physician. Measured outcomes will include accuracy of previous medication history, productivity (defined as number of medication histories per 100 inpatient admissions and number of medication histories per medication history technician hours staffed), and employee satisfaction with medication history process measured by survey. All metrics will be measured over a 6-month period from October 2016 to March 2017.

Results: Research still in progress.

Conclusion: Research still in progress.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-220

Poster Title: Clostridium difficile rates and antibiotic exposure among patients in a community teaching hospital

Primary Author: Morgan Pusek, CHI Health-Bergan Mercy Medical Center, NE; **Email:** morgan.pusek@alegent.org

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Purpose: Clostridium difficile infection (CDI) has multiple etiologies, with prolonged antimicrobial exposure being one of the most common. The Infectious Disease Society of America recommends minimizing the frequency, duration, and number of antimicrobial agents to reduce CDI risk. The primary objectives of this study are to evaluate antibiotic exposure among hospitalized patients with CDI and appropriateness of therapy.

Methods: This quality review will be submitted to our Institutional Review Board for approval. The health system's electronic medical record system was used to identify patients diagnosed with CDI between March, 1, 2016 and August 31, 2016. The following data will be collected: demographics, antibiotic exposure, proton pump inhibitor (PPI) exposure, time to positive culture from admit, CDI treatment, and time to therapy from positive culture. The primary endpoint will be total antimicrobial exposure among CDI patients, defined as the number of antimicrobials per day divided by the number of days of antimicrobial therapy prior to CDI. Secondary endpoints will be PPI exposure, appropriateness of CDI therapy, and rate of CDI among medical teams. After identifying the antimicrobial exposure rates among CDI patients, the results of the study will help us identify areas where antimicrobial stewardship can be improved. We plan to re-evaluate prescribing habits, antimicrobial exposure, and CDI rates in the future.

Results: In progress

Conclusion: In progress

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-221

Poster Title: Impact on 30-day Readmission Rates Given Pharmacist Involvement with Discharge Medication Reconciliation

Primary Author: Stephanie Nitz, CHI Immanuel Medical Center, NE; **Email:** stephanie.nitz@alegent.org

Additional Author (s):
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Purpose: The purpose of this study is to evaluate the impact of a pharmacist's involvement in the discharge medication reconciliation process. The primary outcome of this study is patient readmission within 30-days after discharge. The secondary outcomes include the number and type of pharmacist interventions made, patient compliance, and patient presentation to an Emergence Department within 30-days after discharge.

Methods: This study is comparing 30-day hospital readmission rates for patients who had a pharmacist review their medications prior to discharge verses those who did not. Pharmacist interventions will be based on patient-specific factors and clinical judgment. Once a discharge order is entered, a pharmacist will receive an alert via the electronic medical record (EPIC). A pharmacist will then review the discharge medications, make interventions if necessary, counsel on any new medications, and notify nursing that pharmacy discharge counseling is complete. The floor pharmacist will complete an intervention note in EPIC to allow the primary investigator to track outcomes. The primary investigator will collect data on all patients discharged from an inpatient unit, other than psychiatry or labor and delivery, at Immanuel Medical Center between October 1, 2016 and March 31, 2016. Utilizing EPIC the following data will be collected: 30-day readmissions, pharmacist interventions made, patient compliance, and patient presentation to an Emergence Department within 30-days after discharge. It is expected that the majority of pharmacist interventions will focus on medications for high-risk conditions such as cardiovascular, pulmonary, endocrine, and infectious disease. Quantity and type of pharmacist interventions made will be recorded. Patient compliance will be defined if a patient picked up their discharge prescriptions within 48 hours of discharge. The primary investigator will verify this by calling the patient's pharmacy.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-222

Poster Title: Comparison of GLP-1 Agonists and SGLT-2 Inhibitors on Patient Outcomes: A Retrospective Study

Primary Author: Haley Kessinger, Creighton University School of Pharmacy, NE; **Email:** hmk56080@creighton.edu

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Purpose: Current diabetes guidelines do not show preference between SGLT-2 inhibitors and GLP-1 receptor antagonists. Both drug classes have been shown to be very efficacious at hemoglobin A1c (HbA1c) reduction in patients with type 2 diabetes mellitus (T2DM). Drug selection must take into account patient-specific factors, such as cost, route of administration, and adverse events. Little research has directly compared patient outcomes in those taking GLP-1 agonists to patients taking SGLT-2 inhibitors in a real world setting. The purpose of this study is to examine and compare outcomes, specifically HbA1c, in patients taking GLP-1 agonists versus patients taking SGLT-2 inhibitors.

Methods: This research study will be a retrospective cohort that uses data from EPIC, the electronic health record for patients in a single outpatient clinic located in the Dundee Neighborhood of Omaha, Nebraska. This endocrinology and internal medicine clinic serves an adult patient population where T2DM is common.
Inclusion criteria will include patients who are 18 years and older, have T2DM, and were prescribed a GLP-1 agonist or SGLT-2 inhibitor by a CHI Health Dundee provider. Patients must have been started on a GLP-1 agonist or SGLT-2 inhibitor at a CHI Dundee clinic appointment (their “initial visit”) and return for a follow-up visit (3 to 6 months after their initial visit), and an additional follow-up visit (at least 12 months after their initial visit).
Exclusion criteria will include patients who have any other type of DM other than T2DM, were prescribed the GLP-1 agonist or SGLT-2 inhibitor outside of CHI, do not return for any follow-up visit, and discontinue the medication before both of their follow-up visits. At their follow-up visits, patients may receive dosage changes, but should they discontinue the medication for any reason, they will be excluded. If the patient does stop a medication before returning for both follow-up visits, the reason why will be documented.

Secondary outcomes that we will evaluate include changes in body mass index, weight, and blood pressure.

Results: Research-in-progress

Conclusion: Research-in-progress

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 11-223

Poster Title: Confidence is Key: an Educational Intervention Following Family Medicine Resident's Confidence in Writing for Opioids Prescriptions

Primary Author: Elizabeth Scheffel, Creighton University School of Pharmacy and Health Professions, NE; **Email:** ecs51711@creighton.edu

Additional Author (s):
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Purpose: Studies have shown that prescribers who are not specialized in pain management rate confidence levels in writing opioids for chronic pain at a much lower rate than pain management specialists. The objective of this study is to assess the impact of a lecture series designed around the Center for Disease Controls' (CDC) newest guideline update on managing chronic pain and the primary care resident prescriber's assurance levels in confidently managing opioid regimens.

Methods: This study will be submitted to the Institutional Review Board for approval. First, second, and third year residents in Creighton University's Family Medicine Residency Program in Omaha, Nebraska will be assessed on their confidence levels regarding opioid pain management prior to and after a two-part lecture series incorporated in their didactic lecture course. Faculty in the Department of Family Medicine who attend the lecture series will also have the opportunity to participate. Participants will be assessed using the KnowPain-12 questionnaire, a tool used to measure provider pain management knowledge. The questionnaires will be deposited in each of the participant's mailboxes in a sealed envelope 30 days prior, directly after second lecture, and 3 months following the lecture series. The two-part lecture series will cover the 12-point CDC guideline update from March 16th, 2016 on the management of chronic pain. Each lecture will be approximately 1 hour in length and will contain at least 2 case presentations for the purpose of practicing learned material. Data will be collected to determine trends in prescriber confidence levels and determine weak areas in learning.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-224

Poster Title: Appropriate use of fibrate therapy within Veteran's Affairs Nebraska-Western Iowa Health Care System

Primary Author: Maggie Hein, VA Nebraska-Western Iowa Health Care System - Lincoln Division, NE; **Email:** maggie.e.hein@gmail.com

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Purpose: The objective of this retrospective medication use evaluation is to evaluate the appropriateness of fibrate therapy within an ambulatory care setting based on the Veteran's Affairs/Department of Defense Clinical Practice Guideline for the management of dyslipidemia for cardiovascular risk reduction. We predict that many patients on fenofibrate or gemfibrozil can discontinue fibrate therapy or be appropriately switched to monotherapy with a statin.

Methods: This medication use evaluation will review all patients receiving care from the ambulatory care clinic with an active prescription for gemfibrozil or fenofibrate within the past twelve months. The national Veteran's Affairs/Department of Defense lipid guidelines will be utilized to assess if these prescriptions are appropriate based on literature recommendations. Each veteran's active prescription will be reviewed within the electronic medical record and appropriateness will be assessed based on the aforementioned guidelines. The following data will be collected: active prescriptions for lipid statins, niacin, fish oil, bile acid sequestrants and pancreatic enzymes, baseline total cholesterol, baseline low-density lipoprotein, baseline high-density lipoprotein, baseline triglycerides, history of triglycerides greater than 2,000 mg/dL, highest recorded triglyceride level, nutrition appointment within the last three years, alcohol use, history of elevated thyroid stimulating hormone greater than 4.68 mIU/L, history of elevated creatinine kinase greater than 170 IU/L, history of elevated aspartate transaminase greater than 138 IU/L and alanine transaminase greater than 198 IU/L, history of elevated hemoglobin A1c greater than 9 percent, non-pharmacological recommendations, history of pancreatitis, history of adverse reaction to fibrate therapy, history of rhabdomyolysis, and history of statin intolerance. After reviewing the data, if a change in therapy is indicated the reviewers will make appropriate recommendations to the prescribing providers.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Evaluative Study

Session-Board Number: 11-225

Poster Title: Initiation of a clinical pharmacist run discharge medication reconciliation program.

Primary Author: Stefanie Gann, Renown Regional Medical Center, NV; **Email:** sgann@renown.org

Additional Author (s):
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Purpose: Heart failure is one of the leading causes of hospital admissions and readmissions. Readmissions result in billions of dollars in healthcare costs, complex drug regimens and lower quality of life. Complex drug regimens can result in non-compliance, drug-drug interactions and adverse drug events all of which can lead to readmissions. Effective transition from hospital to home setting is a critical step in patient care. Studies have shown the impact on clinical outcomes of a clinical pharmacist's involvement in discharge counseling.1,2 Currently at Renown Regional Medical Center (RRMC), the clinical pharmacist has limited involvement in discharge prescription review or patient counseling.

Methods: This study is a retrospective analysis of medication error rates for discharge prescriptions for the heart failure patient population before and after a pharmacist discharge counseling program (PDCP) implementation. The primary outcome will be the number of total medication errors. The secondary outcome will be rate of 30 day all-cause readmission to RRMC. The pre-PDCP evaluation period will be May – June 2016 and will include all patients discharged from RRMC with a heart failure diagnosis. The post-PDCP evaluation period will be January-February 2017 and will include all patients that received PDCP services. Patients who are pregnant, < 18 years of age, incarcerated or mentally ill will be excluded. Data collected will include patient demographics, laboratory values, and medication histories. Medication errors will be assessed based on the rate of duplications, omissions, interactions, indication, inappropriate dosing or drug for patient specific factors and access to medication. Primary outcome data will be analyzed using the descriptive statistics and Chi-squared test or Fisher's exact test. This study is in process of being approved by the institutional review board.

Results: In process

Conclusion: Not applicable at this time

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-226

Poster Title: Impact of a pharmacist consult on the medication management of psychiatric boarding patients in the emergency department

Primary Author: Hannah Thomas, Renown Regional Medical Center, NV; **Email:** hthomas@renown.org

Additional Author (s):
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Purpose: Limited access to psychiatric care and resources has increased the number of patients seeking psychiatric evaluation in emergency departments across the country. The American College of Emergency Physicians created a guide to care for the psychiatric boarding patient. It does not include medication management for these patients who may be hospitalized for several days. It is hypothesized that with pharmacist involvement in medication reconciliation and chronic disease state management there will be a decrease in rescue medications for agitation and psychosis. This study will evaluate the impact of pharmacist directed medication management for psychiatric boarding patients in the emergency department.

Methods: Prior to commencement, this study will be evaluated by the Institutional Review Board for approval. The electronic medical record will be analyzed retrospectively to evaluate patients boarded in the emergency department while awaiting transfer to a psychiatric facility between September 1, 2014 to September 30, 2014 for the pre-implementation group, and September 1, 2015 to September 30, 2015 for the post-implementation group. The primary outcome for the study is the reduction in rescue medication doses required during the patient's emergency department visit. The secondary outcomes of the study include medication reconciliation completed and home medications restarted during the patient stay. The following data will be collected from the patient's medication administration record: doses of antipsychotics, benzodiazepines and antihistamines administered. The following data will be collected from the patient's electronic medical record: admitting psychiatric complaint, length of stay, medical diagnoses, completion of a medication reconciliation, the number and class of home medications ordered, number of home medications not continued, and medication changes made by the pharmacist. If available, the number of interventions discussed with the physician by the pharmacist recorded in the pharmacy progress note will also be collected.

Statistical analysis will be performed using paired t-tests for the primary outcome and chi-squared tests for secondary outcomes.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-227

Poster Title: Evaluation of Tigecycline for use in Clostridium difficile infection

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Purpose: Clostridium difficile is one of the most common nosocomial infections. Despite utilization of IDSA guideline-concordant therapy with metronidazole and/or oral vancomycin, C. difficile infection is often associated with high rates of treatment failure and mortality. Limited case reports have shown clinical cure in severe and recurrent C. difficile infections after tigecycline administration. Currently there are no recommendations for tigecyline in patients with C. difficile. The objective of this study is to determine if tigecycline is associated with improved clinical outcomes in patients with C. difficile infection.

Methods: This will be a single-center, retrospective case control study of inpatients at Renown Regional Medical Center with C. difficile infection from June 1, 2011 to May 31, 2016. Prior to initiation, the study will be reviewed by the Institutional Review Board. Cases will be patients 18 years or older that received tigecycline for C. difficile infection. Each case will be matched to two controls by age, sex, disease recurrence, presence of the 027-NAP1-BI strain, and baseline white blood cell count and serum creatinine. Patients with C. difficile infection will be defined as those having diarrhea and C. difficile in stool confirmed by PCR. The primary outcome will be clinical cure defined as resolution of diarrhea, fever, leukocytosis, and abdominal pain. Secondary outcomes will include time to clinical cure, length of stay, mortality, and sustained response. Additional data collection will include acid-suppressive therapy, antimotility agents, laxatives, stool softeners, lactate, albumin, concurrent antibiotics, complications of infection, surgical interventions, fecal microbiota transplant, and adverse drug reactions. Chi-squared test will be used to analyze the primary outcome, and secondary outcomes will be analyzed by student t's test for continuous data and Chi-squared test for categorical data.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-228

Poster Title: Efficacy and safety of switching sodium-glucose cotransporter-2 (SGLT-2) inhibitor therapy in type-2 diabetes mellitus (T2DM)

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Purpose: Use of SGLT-2 inhibitors results in decreased blood glucose, caloric loss, and mild diuresis thereby promoting A1C lowering, weight loss, and blood pressure lowering. There are currently three SGLT-2 inhibitors on the market and the choice of one over the others is often dictated by insurance coverage, as well as the publication of a cardiovascular outcomes trial for empagliflozin (Empa-Reg). Changing insurance coverage often leads to switching between canagliflozin, dapagliflozin, and empagliflozin. There are no published studies comparing the efficacy of SGLT-2 inhibitors. This study will assess the safety and efficacy of switching from canagliflozin to dapagliflozin or empagliflozin.

Methods: This study was approved by the Albany College of Pharmacy and Health Sciences Institutional Review Board. This pre-post observational study utilized patient medical records from an office-based endocrinology practice. The study population will consist of T2DM patients who received canagliflozin for a minimum of six months and were then switched to dapagliflozin or empagliflozin for a minimum of six months. Subjects will be identified via a computerized text search of the medication and problem lists of patient electronic medical records using the search terms canagliflozin, Invokana, dapagliflozin, Farxiga, empagliflozin, Jardiance, SGLT-2 inhibitor, and T2DM. Inclusion criteria include age 18–85 years of age, T2DM, received canagliflozin for a minimum of six months, use of dapagliflozin or empagliflozin for a minimum of six months, and baseline A1C of 6-10%. Exclusion criteria include T1DM, patients with renal impairment (CrCl < 45 ml/min), and initiation of additional diabetes, hypertension or cholesterol drugs during the follow-up period.

The primary study outcome is change in A1C. Secondary outcomes include: change in weight, percent of patients achieving A1C < 7%, changes in systolic and diastolic BP, changes in lipid parameters. Paired t-tests and the Wilcoxon rank-sum test will be utilized for statistical analysis. A sample size of 200 patients is required for a Beta error of 0.8 and an alpha error of 0.05, to detect an A1C change of 0.3%.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-229

Poster Title: Intervention to decrease proton pump inhibitor usage and associated Clostridium difficile infection rates

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Purpose: Clostridium difficile infection (CDI) is associated with annual national costs over $3 billion dollars, morbidity, and mortality, with severity ranging from mild diarrhea to fulminant colitis, and even death. Studies have suggested an increased risk of CDI when proton pump inhibitors (PPIs) are prescribed, and this risk appears to be less with histamine-2 receptor antagonists (H2RAs). The objective of this study is to determine if there is a practical way to have an impact on PPI prescribing patterns utilizing active interventions, order set changes, and education, to ultimately result in a decrease in CDI.

Methods: New PPI orders were reviewed between the dates of August 28, 2016 and September 9, 2016. These orders were evaluated for necessity and a decision was made to intervene recommending either discontinuation or a change to a H2RA when appropriate. This study was submitted to the Institutional Review Board for approval. Data collected included patients' age, PPI duration, concomitant antibiotic use, the intervention made (if any), intervention acceptance rate, and whether or not CDI occurred during admission. Data collection was stopped after two weeks due to high patient volume and poor acceptance rates: 277 orders were reviewed, 3 of 20 interventions to discontinue were accepted, and 1 of 39 interventions to change therapy to a H2RA were accepted. There was also a review of 16 computerized physician order entry (CPOE) order sets which contain options for either PPI or H2RA use with no preferred guidance. We worked with information technology (IT) to develop a banner which could be added to these orders to caution against PPI use due to CDI risk and indicate H2RAs as the preferred agent. An education campaign is also being developed to inform providers about the association between CDI and PPI use and indications where H2RAs are suitable alternatives.

Ongoing data collection hopes to see a decrease in prescribing of PPIs along with a decrease in CDI with these efforts.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-230

Poster Title: Comparison of an antifactor Xa (anti-Xa) protocol versus an activated partial thromboplastin (aPTT) protocol for heparin monitoring at a tertiary medical center: a pilot study

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Purpose: The two most common unfractionated heparin (UFH) monitoring methods are activated partial thromboplastin time (aPTT) and antifactor Xa assay (anti-Xa). Drawbacks to aPTT include poor correlation with heparin concentration, variable response to reagents, and sensitivity to acute phase reactants. Anti-Xa is the standard for determining in vivo UFH activity and is less susceptible to interference. The purpose of this study is to compare the performance of an anti-Xa protocol vs. an aPTT protocol using time to reach therapeutic range and percentage of values that were therapeutic. In addition, discordance between paired anti-Xa and aPTT values was analyzed.

Methods: A pilot anti-Xa protocol was implemented in the medical intensive care unit at a tertiary medical center. The standard dose protocol included an optional bolus of 60 units/kg, initial infusion of 18 units/kg/hr, and optional rebolus. The goal anti-Xa range was 0.3 to 0.7 units/ml. The low dose protocol included an optional bolus of 40 units/kg, initial infusion of 12 units/kg/hr, and optional rebolus. The goal anti-Xa range was 0.3 to 0.5 units/ml. Doses were not capped based on patient body weight. Anti-Xa and aPTT pairs were obtained at designated monitoring intervals.
The standard dose aPTT protocol included an optional bolus of 80 units/kg (maximum 10,000 units), initial infusion of 18 units/kg/hr (maximum 2000 units/hr), and optional rebolus. The goal aPTT range was 40 to 70 seconds. The low dose aPTT protocol included an optional bolus of 60 units/kg (maximum 4,000 units), initial infusion of 12 units/kg/hr (maximum 900 units/hr), and optional rebolus. The goal aPTT range was 35 to 39 seconds.
A retrospective chart review of all patients on the anti-Xa protocol and a random sample of patients on the aPTT protocol from May 2016 through August 2016 was conducted. Variables

assessed included demographics, indication and dosing, anti-Xa levels, and aPTT values. Descriptive and quantitative analyses were performed.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-231

Poster Title: Implementation of asthma educational services provided by certified asthma educator pharmacists in an inner-city hospital.

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Purpose: In July 2014, clinical pharmacists in our institution who are certified asthma educators began providing asthma education services in the outpatient pulmonary clinic. During clinic visits, the pharmacists educate patients on asthma pathophysiology, trigger avoidance, medication instructions, and peak flow monitoring. An Asthma Action Plan is also provided to patients. The objective of this study is to determine if there is a difference between Asthma Control Test (ACT) scores before and after education by certified asthma educator pharmacists.

Methods: This study is under review by the Institutional Review Board. This study will be a retrospective, single center chart review conducted at our institution. Patients at least 18 years old who were provided asthma education by the certified asthma educator pharmacists between July 2014 to September 2016 will be included in the study. Data will be collected through the hospital's electronic medical record (EMR) system and patients information will be de-identified. Patients' ACT scores will be collected during initial and follow up clinic visits. Other parameters such as patients' baseline characteristics, medications, consult orders, and disease severity will be documented.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-232

Poster Title: Impact of pharmacist discharge counseling on direct oral anticoagulants (DOAC)

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Purpose: Pharmacist counseling during transitions of care has resulted in improved patient outcomes. One area for potential impact is with direct oral anticoagulants (DOACS). These medications require dose transitions at specified time intervals for certain indications. However, limited data is available on whether these transitions are being done as recommended by manufacturers. Lack of follow-up could lead to medication errors and possible readmission as patients continue on inappropriate doses. The objective of this study is to evaluate the impact of discharge counseling and post-discharge follow-up conducted by pharmacists on the number of patients who receive appropriate DOAC dose transitions.

Methods: This study is pending approval by our Institutional Review Board. This retrospective chart review will include patients who were discharged from an inpatient hospitalization on apixaban or rivaroxaban. Patients will be included in the study if they have a primary care provider (PCP) at our institution and were previously on a DOAC or were newly initiated on a DOAC during their inpatient stay. Data collected will include: whether patient received pharmacist discharge counseling, name of medication, strength, quantity, and directions for use, and indication. We will also determine whether patients were given and attended a follow-up PCP/cardiology/pharmacist appointment post inpatient discharge to receive appropriate dose transitions. We will compare the number of patients who received appropriate DOAC dose transitions before and after implementation of care transitions counseling and post-discharge follow-up. We will also compare the patient follow-up rates and 30-day readmission post pharmacist counseling.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-233

Poster Title: Impact of CPOE-assisted 'time-out' reassessment of intravenous vancomycin therapy 72 hours after initiation

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Purpose: Antibiotic “time-outs” encourage prescribers to perform routine reassessments of antibiotic regimens. The use of a checklist during a “time-out” that promotes appropriateness of antibiotic therapies has been shown to decrease the duration of therapy and increase the correct targeting of pathogens. “Time-outs” have been proposed for antibiotic stewardship programs by the CDC and IDSA, but the literature on the implementation and effectiveness of such strategies is limited. Computerized physician order entry (CPOE) will be used to facilitate hospital-wide antibiotic “time-outs”. The objective of this study is to quantify the impact of a CPOE-assisted “time-out” of vancomycin.

Methods: This study is under review by the institutional review board. This will be a retrospective, single center chart review study conducted at our institution. A third-party database will be utilized to generate a report of all adult patients that have received vancomycin therapy at our institution three months prior to and three months after implementation of the CPOE-assisted antibiotic "time-out." The hospital's electronic medical record system will be used to access pertinent patient information including: antibiotic "time-out" document compliance information, vancomycin dose, frequency, length of therapy, culture results and antibiotic therapies thereafter. Primary outcome is defined as compliance with completion of antibiotic reassessment form. Secondary outcomes are average length of therapy for vancomycin and the rate of correct targeting of pathogens after 72 hours from the initial order placement.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-234

Poster Title: Evaluation of hepatitis C pharmacy services in an ambulatory care urban setting: the impact of a collaborative drug therapy management agreement

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Purpose: Hepatitis C virus (HCV) is one of the greatest public health threats within the United States. Establishment of a hepatitis C collaborative drug therapy management (CDTM) service in an ambulatory care clinic will allow for pharmacists to play a crucial role in providing improved quality of care to an underserved HIV-positive patient population. The concerted efforts of an interdisciplinary team treating those indicated for HCV therapy will lead to improved sustained virologic response rates (SVR) within the clinic. This study will evaluate the impact of pharmacy services within this interdisciplinary team.

Methods: After implementation of hepatitis C CDTM pharmacy services, data will be collected for HIV-positive patients who receive HCV services from August 1st, 2016 through July 30th, 2017. Data will be compared to HIV-positive patients who have previously received non-pharmacy HCV services at BHMC during the year of 2015. The primary endpoint is the percentage of patients achieving HCV cure, defined as SVR 12 weeks post treatment (SVR12). Secondary outcomes include HCV RNA levels at treatment weeks 4 and 12, patient adherence, and a composite of pharmacist interventions including medication acquisition as well as identification and resolution of drug therapy problems.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-235

Poster Title: Pharmacy concierge financial outcomes for atypical long-acting injectable antipsychotics in the adult outpatient psychiatric department

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Purpose: Many psychiatric patients are receiving long term maintenance therapy in the form of long-acting injectable (LAI) medications. This is an appealing choice for many patients as the medication adherence rates in this patient population are some of the lowest in any disease state. The American Psychiatric Association recommends atypical anti-psychotics as first-line treatment for initial episodes and LAI's for repeatedly non-adherent patients. The purpose of this project is to facilitate LAI acquisition for patients in the adult outpatient psychiatric department (AOPD) in conjunction with the BHMC outpatient pharmacy.

Methods: The study was approved by the Institutional Review Board and the results of the project will be presented to the Pharmacy and Therapeutics Committee. The inpatient and outpatient pharmacy electronic medical systems will be used to identify patients who are currently taking an atypical LAI. Medical notes may also be accessed in order to determine any changes made to patient therapy. The following data will be collected: medication patient is taking, type of insurance patient has, wholesaler acquisition cost, amount reimbursed by insurance company and reasons for insurance rejection to pay. All data will be recorded without patient identifiers and patient confidentiality will be maintained. The total financial outcomes for the LAI's will be calculated over a one month time period after implementation of the pharmacy concierge and compared to the financial outcomes over a similar period of time before the concierge was initiated in the AOPD to assess improvement.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-236

Poster Title: Impact of pharmacist intervention on the prescribing practices in the elderly population

Primary Author: Maureen Muthoni, Brookdale University Hospital and Medical Center, NY; **Email:** maureen366@gmail.com

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Purpose: Certain medications are considered inappropriate in the elderly population due to increased risk of adverse events and potential harm. Different lists are available to aid clinicians identify these medications. The primary objective of this study is to assess potentially inappropriate medications (PIMs) prescribed in the elderly population using the STOPP (Screening Tool of Older Persons' Prescriptions) and START (Screening Tool to Alert doctors to Right Treatment) Criteria and the Beers Criteria to make clinical recommendations to prescribers. Secondary objectives will be analyzing interventions made by the pharmacists, interventions accepted by prescribers and identifying which screening tool detects more PIMs.

Methods: This study has been submitted to the Institutional Review Board and is pending approval. This will be a retrospective study taking place in anticoagulation and medication management clinics. Pharmacists will review the medications of all patients age 65 and older seen in the clinics between September 2015 through September 2016. The pharmacists will identify any PIMs based on the STOPP/START and Beers Criteria. Pharmacists will complete a full chart review to check if there is a specific reason the patient has to be on a PIM. This should be completed before the pharmacist contacts the physician to make any recommendations on stopping medications. Pharmacists will then contact prescribers to make any medication recommendations based on the screening tools. Pharmacists will document all overall recommendations as well as specific recommendations accepted by the prescribers. The primary endpoint will be PIMs identified based on STOPP/START and Beers Criteria. The secondary endpoints will be number of medication recommendations made by the pharmacists and number of medication recommendations accepted by the prescribers. Descriptive statistics will be utilized.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-237

Poster Title: Identification of patients at risk for opioid overdose and the implementation of a naloxone dispensing program at an urban medical center

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Purpose: In 2015, there were 937 unintentional drug overdose deaths in New York City which equated to a 66% increase in the overdose rate since 2010. To address this growing public health issue, New York State Department of Health has created an initiative to expand the availability of naloxone throughout communities. The objective of this study is to identify admitted patients who are at risk of a future opioid overdose and provide them with a naloxone overdose kit at the bedside prior to discharge.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients who are determined to be at risk of future opioid overdose and should therefore receive a naloxone overdose kit upon discharge. Patients will be included if they were admitted to the medical center due to an opioid overdose, have a positive urine toxicology screening on admission, are taking high-dose opioids (>100mg/day morphine equivalent), or take methadone or buprenorphine/naloxone for opioid dependence. The following data will be collected: patient age, gender, ethnicity, current opioid medications, history of drug use, past medical history related to drug/opioid use, and urine toxicology. To maintain confidentiality, data will be recorded without patient identifiers. Patients will be counseled regarding their risks for future overdose and informed of the benefits of naloxone in the setting of overdose reversal. When necessary, referrals to an addiction treatment center will be made. With the patient's consent, a standing order for naloxone will be used to dispense a naloxone overdose kit from an outpatient pharmacy. The kit will be brought to the patient's bedside in which a pharmacist will counsel on the proper use of the

device with the aid of additional instructional materials. The investigators will also track opioid related readmissions during the study period.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-238

Poster Title: Evaluation of alteplase utilization for ultrasound-assisted catheter-directed thrombolysis for pulmonary embolism in hospitalized patients

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Additional Author (s):
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Purpose: Thrombolysis is recommended for patients with pulmonary embolism (PE) associated with hypotension and a low risk for bleeding. Catheter-directed thrombolysis can achieve lysis of a thrombus more rapidly and with lower doses of thrombolytic therapy than intravenous administration since it is administered at the site of the clot. The addition of an ultrasound component is theorized to separate and disaggregate fibrin fibers, allowing the fibrinolytic agent to achieve greater penetration. The aim of this study is to evaluate the use of alteplase in ultrasound-assisted, catheter-directed thrombolysis for PE in hospitalized patients.

Methods: This retrospective review evaluated the use of alteplase in ultrasound-assisted catheter-directed thrombolysis of PE in hospitalized patients. All patients diagnosed with a PE who received this therapy between December 2015 and August 2016 were included in the study. Those patients who were ordered alteplase as part of the ultrasound-assisted catheter-directed thrombolysis protocol, but were never administered alteplase were excluded from the study. Data analysis was performed to determine the average total dose and duration of alteplase administered to patients and the appropriateness of alteplase products sent from the pharmacy in regards to waste and cost. Several secondary endpoints included major bleeding within 72 hours of alteplase initiation, recurrent venous thromboembolism during hospital stay, re-hospitalization within 30 days, and the need for additional alteplase infusion beyond initial administration. In addition, concurrent heparin/anticoagulant use, adverse events, outcome of therapy, length of hospitalization/ICU stay, and oral anticoagulant prescribed for long-term anticoagulation were collected for quality measures.

Results: The analysis of this review is pending.

Conclusion: The analysis of this review is pending.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-239

Poster Title: Evaluation of antibiotic use in patients with asymptomatic bacteriuria identified in the Emergency Department

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Purpose: The purpose of this medication use evaluation is to identify the inappropriate administration of antibiotics to patients with asymptomatic bacteriuria. The primary objective is to identify the number of patients with asymptomatic bacteriuria who are inappropriately treated with antibiotics in the Emergency Department. The secondary objective is to identify the number of patients inappropriately continued on antibiotics after admission.

Methods: Cerner (electronic medical record) queries will be used to generate a list of patients with urinalyses ordered in the Buffalo General Medical Center Emergency Department during two consecutive weeks in March of 2016. The electronic medical records of these patients will then be reviewed to identify the evaluable population. Patients included in the study will be assessed for meeting UTI criteria. Meeting UTI criteria is defined as a positive urinalysis with fever of >38◦C or urinary symptoms. Patients with a positive urinalysis who do not have a fever of >38◦C or urinary symptoms will be categorized as having asymptomatic bacteriuria. In this study, a positive urinalysis is defined as meeting one of the following criteria: > 6-25 WBC/hpf, positive leukocyte esterase, or positive nitrites. Urinary symptoms are defined as urgency, frequency, dysuria, suprapubic tenderness, and costoverterbral angle pain or tenderness. Inappropriate antibiotic initiation is defined as patients who received antibiotics despite not meeting UTI criteria. Inappropriate antibiotic continuation will be assessed in patients who are admitted as inpatients and will be defined as patients who are continued on antibiotics despite not meeting UTI criteria.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-240

Poster Title: Impact of a pharmacist intervention on congestive heart failure patients identified as high risk for preventable disease-related hospital admissions.

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Purpose: Congestive heart failure (CHF) is a progressive, chronic disease for which low-quality care can lead to high costs from avoidable hospital admissions. CHF can generally be managed in the outpatient care setting to prevent exacerbations and the need for hospitalizations. Medication adherence and disease state education can help the patient self-manage their disease, thus reducing preventable hospitalizations, improving quality of care, and decreasing cost of care. The objective of this research is to understand the impact of a pharmacist-led intervention on reducing avoidable admissions when patients identified as high risk receive targeted medication therapy management (MTM) services.

Methods: A predictive model that includes covariates such as comorbidities, adherence, demographics, and total cost of care will be used to identify members with CHF who are at high risk for a preventable disease-related admission. These members will be stratified based on the probability of a preventable hospital admission within six months. Those at highest risk will be identified for intervention with a pharmacist who will provide MTM services. During the intervention, the pharmacist will collect patient information, assess medication therapy using evidence-based guidelines, evaluate drug interactions, educate the patient, and address any identified problems. Criteria for this study includes members with a CHF diagnosis who are 18 and older and have continuous coverage during the study period. Those members with an intervention will be matched to a member with similar characteristics without an intervention to form a control cohort. Preventable hospitalization rates at six months post-intervention will be compared between the two groups to measure the effectiveness of the intervention.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-241

Poster Title: Understanding the variation of prescribing patterns with disease-modifying anti-rheumatic drugs (DMARDs) for members newly diagnosed with rheumatoid arthritis (RA)

Primary Author: Ashir Shumunov, Capital District Physicians' Health Plan (CDPHP), NY; **Email:** ashir.shumunov@cdphp.com

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Purpose: Rheumatoid arthritis (RA) is a chronic, debilitating condition that affects 0.4 to 0.47 percent of Americans. There is no cure for RA; however, disease-modifying anti-rheumatic drugs (DMARDs) are highly effective for protecting joints and minimizing inflammation in other organs. According to American College of Rheumatology guidelines, early intervention with DMARD therapy helps preserve function and prevent further complications. In 2014, DMARDs for all indications accounted for approximately 10 percent of the $310 billion U.S. prescription drug market, with costs steadily increasing. This project aims to evaluate the variations in prescribing patterns among area providers with respect to current clinical literature.

Methods: The study population includes members with a new diagnosis of RA. Inclusion criteria for the analysis are as follows: members must be at least 18 years old, have at least two RA-related diagnoses on a medical claim, and be continuously enrolled two years before and after the first RA diagnosis. Both clinical and economic metrics will be evaluated in this analysis. Clinical parameters include time to first pharmacologic therapy, subsequent medication(s) used, discontinuation rate, medication adherence, and dose changes. Additionally, the effect of a patient's comorbidities on the treatment pathway chosen will be evaluated. The total cost of care associated with prescription drugs, labs, office, ambulatory, hospital, and emergency room visits will be assessed in the economic analysis. Trends will be evaluated with current clinical literature to identify variations. Data will be gathered from administrative medical and pharmacy claims databases.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-242

Poster Title: Evaluation of the Appropriateness of Pegfilgrastim Use in Patients at a Small Community Oncology Clinic at Erie County Medical Center in Buffalo, NY

Primary Author: Stephanie Brennan, Erie County Medical Center/University at Buffalo, NY; **Email:** slbrennan333@gmail.com

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Purpose: Pegfilgrastim (Neulasta)is indicated for reducing the incidence of febrile neutropenia in receiving myelosuppressive chemotherapy associated with a clinically significant incidence of febrile neutropenia. The primary objective of this study is to evaluate the appropriateness of use of pegfilgrastim based on both NCCN and ASCO guidelines and the stratification of associated risk factors for febrile neutropenia.

Methods: Potential subjects will be identified via an inquiry in the electronic heath records for all patients at ECMC who were dispensed at least one dose of pegfilgrastim from December 2012-June 2016. Disease-state data collection includes type, site, and stage of malignancy, previous chemotherapy or radiation therapy, previous neutropenia, recent surgical procedures (3 months), performance and nutritional status, and other co-morbid conditions Pharmacologic treatment data collection will include chemotherapy regimen and pegfilgrastim use. Patients will be stratified based on risk factors listed in both NCCN and ASCO guidelines, and use will be classified as either appropriate or inappropriate for each set of recommendations. The information elucidated from this study will be used to examine the current utilization of pegfilgrastim at this institution.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-243

Poster Title: Use of cascading order questions to guide antibiotic selection for patients with a history of beta-lactam reactions: a focus on aztreonam

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Purpose: Penicillin reactions are commonly reported by patients. Despite low cross-reactivity rates with cephalosporin antibiotics, clinicians may avoid all β-lactam antibiotics when selecting agents in patients with reported penicillin reactions. Aztreonam is an alternative agent that is often chosen but is more costly and, at our institutions, has a lower susceptibility rate to Pseudomonas aeruginosa than other broad spectrum gram-negative agents. The purpose of this study is to characterize aztreonam use and to evaluate the impact of the use of order questions on adherence to established institutional clinical practice guidelines for antibiotic selection in patients with a reported beta-lactam reaction.

Methods: This retrospective study will be submitted to the Institutional Review Board for expedited approval. The electronic health record (EHR) will be used to identify all subjects who received orders for aztreonam at our 2 institutions during a 6 month study period. We anticipate reviewing a minimum of 250-300 aztreonam orders from approximately 150 patients. All identified aztreonam orders will be included in this review. There are no gender, racial/ethnic, or age range restrictions. Data to be collected include the presence of any reported medication allergy information (allergy reaction and severity, date of allergy report), history of any prior beta-lactam or cephalosporin antimicrobial use, and provider responses to aztreonam cascading order questions. Provider responses to the order questions will be evaluated and compared to the specific patient chart information. Adherence to the institutional guideline will be characterized by the number of order questions considered to

have been documented appropriately in the EHR. Data will be summarized and analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-244

Poster Title: Evaluating a pharmacist's impact on the treatment of urinary tract infections in a community hospital

Primary Author: Lewey Chan, Huntington Hospital Association, NY; **Email:** leweyc@hotmail.com

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Purpose: In Huntington Hospital, the majority of patients are overseen by individual hospitalists. As a result, there can be an array of differences in habitual prescribing patterns and the treatment of various diseases including urinary tract infections (UTIs). To compound on these differences, the presence of a unit-based pharmacist is not established on all floors. The purpose of this study is to determine the impact a pharmacist has in the course of hospitalization of patients due to UTIs.

Methods: This study has been submitted to the Institutional Review Board for approval. The patient list will be generated by the electronic medical record to include adult subjects (age ≥ 18 years) that have been classified by ICD-9 and ICD-10 codes for asymptomatic bacteriuria, acute cystitis, pyelonephritis and prostatitis. Only patients who were admitted to Huntington Hospital's medical-surgical floors and maternity floors will be included. The following data will be collected: patient's age, sex, admitting diagnosis, presence of an infectious disease consult, type of UTI, urine culture and sensitivity, choice of empiric antibiotic, choice of targeted antibiotic, total days of antibiotic therapy, length of stay, time to defervescence, prevalence of hospital-acquired C. difficile infection, and readmission within 30 days for UTI-related symptoms and/or complications. Multiple logistic regression will be used to determine if there in an association between being treated on a medical-surgical floor that has a unit-based pharmacist and improved outcomes.

Results: Results pending

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-245

Poster Title: Intravenous immune globulin (IVIG) dosing based on ideal body weight: Evaluation of a new dosing protocol

Primary Author: Liz Wojakowski, Kaleida Health Buffalo General Medical Center, NY; **Email:** lwojakowski@kaleidahealth.org

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Purpose: IVIG is typically dosed based on a patient's actual body weight. However, it might be better to base doses on ideal body weight, since immune globulin has a small volume of distribution and distributes minimally in lipophilic tissue. There are also a few small, pharmacokinetic studies to support this dosing strategy. In July 2015, Kaleida Health initiated a dose adjustment policy that allows pharmacists to automatically adjust doses based on ideal body weight. The objective of this study is to evaluate compliance to the dosing protocols before and after implementation and elucidate any further cost savings mechanisms.

Methods: A retrospective cohort will look at adult patients who received IVIG as an inpatient. A computer generated report identified patients who received IVIG from July 2014 through June 2015 who were dosed by actual body weight and from September 2015 through August 2016 who were dosed by ideal body weight based on the new protocol. Demographic data, condition treated, dose ordered, and dose dispensed, will be collected. The primary endpoint is the percentage of patients who were dosed appropriately based on the applicable protocol. The secondary objective is to compare the number of vials dispensed per dose before and after the dosing protocol. Opportunities for further cost savings initiatives will also be identified. This study was approved by the hospital's Pharmacy and Therapeutics Committee.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-246

Poster Title: Evaluation of sugammadex utilization for reversal of neuromuscular blocking agents in surgical patients

Primary Author: Joseph Palumbo, Kaleida Health/Buffalo General Medical Center, NY; **Email:** jgpalumb@buffalo.edu

Additional Author (s):
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Purpose: Sugammadex is a novel drug that has been approved for the reversal of steroidal neuromuscular blocking agents (NMBA) rocuronium and vecuronium. Studies have shown that sugammadex rapidly reverses the effects of NMBA and has improved effectiveness compared to neostigmine. These studies have used sugammadex doses ranging from 0.5 to 16 mg/kg, with current recommended dosing of 2 to 4 mg/kg. This aim of this study was to evaluate the most commonly used dose of sugammadex and to ensure it aligned with recommended dosing.

Methods: This retrospective chart review evaluated the use of sugammadex in elective and non-elective surgical patients. Patients who received sugammadex for the reversal of rocuronium or vecuronium were included in this study. Any patient who was to remain intubated post-operatively or was under the age of 18 were excluded from the study. Data analysis was performed to determine the most commonly used dose of sugammadex in these patients. Several secondary endpoints included what neuromuscular blocking agent (NMBA) was given to the patient, time between the last NMBA dose and the dose of sugammadex, total dose of NMBA used, need for repeat dosing of sugammadex, the use of sugammadex after failed response to neostigmine, and cost of sugammadex dose. This study was approved by the institutions P&T committee.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-247

Poster Title: Development and implementation of a prospective medication use process for restricted non-antimicrobial agents

Primary Author: Emma Gorman, Kaleida Health/Buffalo General Medical Center, NY; **Email:** egorman@kaleidahealth.org

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Purpose: Price hyperinflation of low use, high cost agents has become an increasingly common and problematic scenario in the hospital setting. Due to the huge cost potential associated with a usual course of therapy as well as the availability of appropriate alternatives, many pharmacy and therapeutics committees have proactively designed guidelines for use to combat this. The purpose of this study will be to describe the development of and to evaluate the implementation of a prospective medication use process for evaluating the effectiveness of these guidelines for use.

Methods: This is a prospective, multicenter evaluation of the guidelines for use of restricted agents at three adult facilities within our health system. Guidelines for the appropriate use of these restricted agents are created for individual agents at Pharmacy and Therapeutics committee. Adherence to these guidelines and potential cost avoidance will be evaluated. The development of and implementation of these criteria, including staff education, will be described. Restricted agents to be incorporated in this review include: parenteral calcitonin, ethacrynic acid, methylnaltrexone, intravenous acetaminophen, and eptifibitide. Restricted antimicrobial agents will be excluded from this analysis as their use is monitored regularly. Results will be reported quarterly to the Pharmacy and Therapeutics committee.

Results: n/a

Conclusion: n/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-248

Poster Title: Evaluation of appropriate concomitant use of dual antiplatelet therapy with an oral anticoagulant among patients at a tertiary care institution

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Purpose: Several consensus documents have been published attempting to provide recommendations for optimal management of triple therapy with dual antiplatelet therapy plus an oral anticoagulant. The introduction of the novel P2Y12 inhibitors as well as the direct oral anticoagulants has further complicated this clinical scenario. The applicability of these agents in triple therapy management remains unclear, yet are still being utilized in practice. The objective of this study is to evaluate triple therapy utilization and determine the prevalence of appropriate prescribing in compliance with hospital policy as well as the proportion of patients utilizing a specific agent within each medication class.

Methods: This study has been approved by the institution's Pharmacy and Therapeutics committee. Because this is a quality improvement initiative, institutional review board approval is not required. Patient charts will be identified through a pharmacy charge data query for aspirin plus P2Y12 inhibitor plus direct oral anticoagulant or warfarin use starting from policy implementation date in November 2012 to present. Patients on triple therapy with aspirin plus P2Y12 inhibitor plus direct oral anticoagulant or warfarin prior to admission will be excluded. Manual chart review will be conducted for data collection of demographics and clinical characteristics associated with calculating a CHA2DS2-VASc score. Indications for triple therapy will be evaluated for appropriateness in compliance with current hospital policy. Descriptive statistics will be used to summarize demographic and clinical characteristics of the included patients. The resultant data will be utilized to update current hospital policy and be evaluated for staff education opportunities and further research development.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-249

Poster Title: Identifying a correlation between health literacy scores and frequency of preventative health screening in adults over fifty

Primary Author: Jillian Christy, Kings Pharmacy, NY; **Email:** jillian.c@kingsrx.com

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Purpose: A patient's ability to understand health information also determines their ability to make health related decisions. Although not routinely performed, health literacy assessment tools can be used to assess this ability and may allow healthcare providers to tailor information for patients. The primary endpoint of this study will be to determine if there is a correlation between health literacy scores and frequency of preventative health screening. The secondary and tertiary endpoint will be to determine whether the number of disease states a patient has or recent hospitalizations, respectively, correlates to level of health literacy and frequency of preventative health screening.

Methods: As part of the pharmacy's Medication Therapy Management (MTM) service, patient's will be contacted via phone to participate in the study. After consent, a modified Short Assessment of Health Literacy in English (SAHL-E) health literacy assessment tool will be used to determine their health literacy score. Patients will also be asked a series of questions regarding preventative health screening, as well as the number of treated medical conditions and number of hospitalizations in the past twelve months. This information will be used to determine if there is a correlation between health literacy scores and a patient's overall health management. At the completion of both questionnaires, patients will be counseled on the importance of preventative health screening (mammograms, vaccinations, prostate exams, etc). Adult patients fifty years and older will be identified using the Kings Pharmacy management system OPUS-ISM® in addition to Mirixa® and Outcomes® which are subscription based programs that help facilitate and deliver MTM services.

Results: Pending.

Conclusion: Pending.

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-250

Poster Title: Improving transitions of care from the hospital to community setting: The role of the community pharmacist.

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Purpose: Hospital readmission rates within thirty days continues to be a concern in the health care system. This evaluation will assess readmission rates of patients enrolled in the transitional care service with Kings Pharmacy within three weeks post discharge from New York Methodist Hospital. The secondary endpoint will identify which medication counseling information was retained by the patient three weeks post discharge as a result of receiving bedside counseling at discharge by a pharmacist. The tertiary endpoint will assess whether the patient has already seen their doctor for discharge follow up and or if they already have a scheduled appointment.

Methods: Patients who are part of the Meds to Bed Transitional Care Service at NY Methodist Hospital have their discharge medications filled and delivered to their bedside by Kings Pharmacy and also receive discharge counseling by a pharmacist on all of their discharge medications. This select group of patients will be followed up by a Kings Pharmacy resident at their three week post discharge date. The three week follow up phone call is based on a standard list of counseling points highlighted during discharge counseling. The counseling points retained by the patient, whether they have already seen their primary care provider or have a scheduled appointment and readmission status at three weeks will be recorded. Patients will be educated and counseled on the importance of follow up with their primary care provider and to refill all prescription medications. All data will be recorded without patient identifiers and maintained confidential. The Kings Pharmacy OPUS-ISM pharmacy software system will be used to obtain their medication profile. The New York Methodist Hospital health information technology Cerner system will be accessed periodically to view discharge information such as specific discharge dates and medications prescribed.

Results: Pending

Conclusion: Pending

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-251

Poster Title: Impact of electronic bracelet medication reminder technology on medication adherence in heart failure patients

Primary Author: Jessica Snead, Kingsbrook Jewish Medical Center, NY; **Email:** jsnead@kingsbrook.org

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Purpose: Poor medication adherence in heart failure has been linked to worse cardiovascular outcomes and is a critical aspect of heart failure exacerbation and hospital readmission. Evaluation of medication adherence with electronic medication reminder technology such as telephone calls, alarm devices, and text messaging has been studied with positive results on adherence and health outcomes. However, there is no literature investigating electronic bracelet (EB) medication reminder technology. The primary objective of this study is to evaluate the impact of EB medication reminder technology on medication adherence and the secondary objective is the impact on 30-day readmission rates in heart failure patients.

Methods: Patients are eligible to be enrolled in the study if they have heart failure admission diagnosis documented in the chart; be 18 years of age; have a Bluetooth enabled smart phone; demonstrate ability to utilize the reminder technology; sign informed consent; be discharged to home. The electronic bracelet will be synchronized to the patient's smart phone via Bluetooth and programmed to send notifications based off their individual medication regimen. Each medication will be color-coded and the patient will get a notification both on their phone and on their bracelet with a corresponding medication name and color at the appropriate time for administration. The following data will be collected as part of the study: age, gender, ethnicity, insurance status, contact information (phone number and email), number of prescribed medications, name, dosage, route, frequency, and directions of each medication, medication fill history, medical history, and historical hospital admission data over the last year. This data will be compiled and medication adherence will be recorded as a percentage. The electronic medical record system will be monitored to determine if the patient has been readmitted within the next 30 days. All readmission data collected will be compared to the historic heart

failure 30-day readmission rates at Kingsbrook Jewish Medical Center provided by the Centers for Medicare and Medicaid.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-252

Poster Title: The effect of parenteral ibuprofen (Caldolor) on opioid use in surgery patients

Primary Author: Etty Vider, Kingsbrook Jewish Medical Center, NY; **Email:** evider@kingsbrook.org

Additional Author (s):
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Purpose: Caldolor was approved by the FDA in June 2009. Caldolor is indicated in adults and pediatric patients 6 months and older for the management of mild to moderate pain and the management of moderate to severe pain as an adjunct to opioid analgesics. The analgesic and peripheral anti-inflammatory effects of Caldolor in conjunction with opioids attenuate post-operative pain more than each class alone. The purpose of this study is to determine if the use of Caldolor has increased and if this has improved pain management and decreased opioid use in the surgery unit in a community hospital setting.

Methods: A retrospective review of the institutional utilization of Caldolor and several opioids will be conducted on data from January 1, 2012 to December 31, 2015. This will examine the various trends of Caldolor usage by years, doses used, adverse effects and subsequent opioid use. A report of narcotic use from January 1, 2012 to December 31, 2015 will be generated for commonly utilized opioids in oral, IV/SQ and PCA formulation. A prospective review of current analgesic prescribing habits will also be conducted for 5 days per week for 6 weeks and will examine opioid use, as well as adverse effects. A record will be created with the patient's name, medical record number, pain medications ordered and used, with corresponding pain scores. Pain scores will be trended alongside Caldolor and opioid use to discern any correlation between pain scores and opioid use. Data will be sorted into tables using a Microsoft excel spreadsheet. Descriptive statistics will be used to characterize data and observe trends.

Results: Pending

Conclusion: TBD

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-253

Poster Title: Optimizing medication administration through proactive pharmacy led interventions in a community hospital setting

Primary Author: Mayer Goldberg, Kingsbrook Jewish Medical Center, NY; **Email:** mgoldberg@kingsbrook.org

Additional Author (s):
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Purpose: Medication errors can precipitate serious, devastating consequences and its prevention is one of the National Patient Safety Goals. The use of barcoding has grown exponentially over the last few years and is designed to enhance patient safety. Barcoding ensures that nurses always comply with the 5 R's: right patient, right drug, right dose, right route, and right time before administering the medication. The purpose of this study is to assess a pharmacy led intervention to reduce barcoding overrides and streamline the medication administration process.

Methods: Medication Administration checK, also known as MAK, provides hospitals with the newest innovative technology used to combat medication error. In this study, we implemented proactive procedures such as assigning a technician to cross reference the daily inventory to ensure that updated national drug codes (NDCs) are assigned in the electronic medical administration record. Concurrently, we assessed the pharmacy inventory and the medications available as unit dose packaging. Based on our assessment, of the latter, we revised the process of our unit dose packaging using a cost-benefit analysis to reduce the number of non-barcoded dispensation. In addition, we generated reports from six months prior to the intervention looking at barcode overrides and compared them to reports generated in real-time two weeks after the implementation of the interventions. Using the barcoding override reports, we identified the top 10 medications that nurses have to override. These medications were correlated to our institution's top 10 medication errors and adverse drug events.

Results: The results is pending.

Conclusion: The conclusion is pending.

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 11-254

Poster Title: Utilization review of an innovative pain management order set to improve pain management in a community hospital

Primary Author: Chava Davidovits, Kingsbrook Jewish Medical Center, NY; **Email:** cdavidovits@kingsbrook.org

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Purpose: The Institute of Safe Medication Practices noted that well-designed order sets ensure evidence-based care with reduced risk of medication errors. When trying to manage patients' pain, pain management order sets ensure the appropriate use of opioids and non-opioid therapies. Our institution developed an innovative pain management order set to guide clinicians in providing optimal evidence-based pain treatment. The objective of this drug utilization review was to evaluate patient use of medications ordered via the order set and assess hospital-wide physician utilization of the pain management order set after instruction on the order set was provided.

Methods: This drug utilization review was a concurrent observational project. In October 2016, educational sessions on the pain management order set were provided to internal medicine medical residents. A daily IT report was generated detailing pain medications ordered in the hospital. The report review examined the number of times the order set was utilized and which medications were frequently selected via the order set. Additional aspects examined were the number of times patients utilized the pain medications ordered via the order set, the frequency of additional pain medications ordered when the order set was utilized and the utilization of agents used to treat pain medication adverse events. In order to determine if the educational session increased the utilization of the pain order set, IT pain reports generated prior to October 2016 were also reviewed. Here too the aspects reviewed were the number of times the order set was utilized, which medications were frequently selected via the order set, patients' utilization of the pain medications ordered, and the utilization of agents used to treat pain medication adverse events. A Microsoft excel spreadsheet was created to document the

above findings. Descriptive statistics was then applied to observe trends and to identify if further instruction on pain order sets was warranted.

Results: Pending

Conclusion: Pending

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Case Report

Session-Board Number: 11-255

Poster Title: Intramuscular haloperidol for the treatment of cannabinoid hyperemesis syndrome: a case report

Primary Author: Sora Vysotski, Kingsbrook Jewish Medical Center, NY; **Email:** sora.vysotski@gmail.com

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Purpose: Cannabinoid hyperemesis syndrome (CHS) is a medical condition triggered by chronic cannabis overuse and characterized by compulsive bathing behaviors and recurrent episodes of vomiting unresponsive to conventional antiemetics. This case describes the use of haloperidol for cannabinoid hyperemesis syndrome. A 36-year-old female presented to emergency department (ED) and complained of recurrent vomiting and abdominal pain. The pain began 4 days prior to presentation to the ED and was reported as severe, sharp and radiated to the epigastric region. She denied fevers, chills, diarrhea, constipation, or melena. She was seen at an outside facility for the same complaint 3 days prior to her presentation at this ED and was given ondansetron. Although the patient denied relief with ondansetron, she did report temporary relief with hot showers. Her past medical history was significant for hypertension, gastritis, and asthma. She had no history of a similar problem. The patient admitted to smoking marijuana with unknown frequency, daily cigarette use, and occasional alcohol use. Her home medications included: pantoprazole, budesonide/formoterol and albuterol. Laboratory work-up was unremarkable and pregnancy test was negative. In the ED the patient was initially treated with intravenous (IV) fluids, metoclopramide IV, diphenhydramine IV, and famotidine IV. Four hours later the patient still complained of nausea and abdominal pain, so the decision was made to administer intramuscular (IM) haloperidol. Approximately one hour later the patient reported significant relief of her symptoms. She was discharged from ED 2 hours later, symptom free, with instructions to discontinue cannabis use. Although the pathophysiology of cannabinoid hyperemesis syndrome (CHS) remains unclear at this time, this case illustrates the successful use of IM haloperidol for relief of CHS refractory to conventional pharmacologic agents.

Methods:

Results:

Conclusion:

Submission Category: Critical Care

Submission Type: Case Report

Session-Board Number: 11-256

Poster Title: Probable valproic acid induced Stevens-Johnson Syndrome without concomitant lamotrigine

Primary Author: Justine Choe, Kingsbrook Jewish Medical Center, NY; **Email:** jchoe@kingsbrook.org

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Purpose: Stevens-Johnson Syndrome (SJS) is a severe mucocutaneous reaction where epidermis detachment occurs in less than 10% of the body surface area. SJS may also manifest with mucous membrane involvement, most commonly ocular, oral or genital mucosal tissues. SJS is usually caused by drugs, the most common offenders including carbamazepine, allopurinol, lamotrigine, nonsteroidal anti-inflammatory drugs and sulfa antibiotics. This case report describes a patient who developed SJS likely secondary to valproic acid. The patient was a 49-year-old female who presented to the emergency room (ER) with a generalized rash that began about five days prior. She was seen by a dermatologist, who obtained a skin biopsy and then referred her to the ER. On presentation, she had a generalized skin rash on the upper mid chest that covered greater than 80% of the body surface area but had less than 10% skin detachment. The patient's past medical history included diabetes, asthma, human immunodeficiency virus and bipolar disorder. She reported a penicillin allergy secondary to rash. The patient's home medications prior to admission included quetiapine 100mg by mouth once daily, metformin 1000mg by mouth twice daily, insulin detemir 20 units subcutaneously at bedtime fluticasone/salmeterol diskus 100/50mcg twice daily, albuterol sulfate inhaler as needed, zolpidem 10mg by mouth at bedtime and valproic acid immediate release 250mg by mouth twice a day. Recent medication changes included an increase of her valproic acid dose to 250mg twice a day (unknown initial dose) and a recent start of zolpidem. All home medications were discontinued upon admission and patient was admitted to the critical care unit. Ophthalmology and gynecology were consulted for the mucosal tissue involvement. The patient was started on diphenhydramine 50mg intravenously every eight hours, methylprednisolone 40mg intravenously every eight hours, and famotidine 40mg intravenously every morning.

Supportive care included petroleum jelly and gauzes for her skin rashes and a suspension of diphenhydramine 12.5mg/5mL, nystatin, viscous lidocaine 2% and aluminum hydroxide/magnesium hydroxide for the oral lesions. After dermatology consult, methylprednisolone was discontinued and cyclosporine 4mg/kg PO twice daily was started. After skin biopsy returned positive for SJS, patient was accepted for transfer to a burn center for further management. After applying the Naranjo algorithm for causality, a score of probable was obtained for valproic acid causing SJS. Patients with infections such as HIV or with HLA B*1502 phenotype may be at a higher risk for the development of SJS. Valproic acid has a less than 1% risk of SJS according to the manufacturer. Upon review of the literature, this adverse event was only seen in two prior case reports when given without concomitant lamotrigine. This case highlights the importance of obtaining a thorough medication history, acquiring a timeline of new medications and dose adjustments to help determine the probable cause of SJS, and the possibility of valproic acid monotherapy causing SJS.

Methods:

Results:

Conclusion:

Submission Category: Infectious Diseases

Submission Type: Case Report

Session-Board Number: 11-257

Poster Title: Achromobacter xylosoxidans bacteremia in a long term care facility: a case report

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Purpose: Achromobacter xylosoxidans is a rare nosocomial pathogen that has a high mortality rate. Documentation exists that this pathogen causes bacteremia, pneumonia, ventriculitis, endocarditis, meningitis and osteomyelitis. Although not inherently virulent, the pathogen can complicate outcomes due to host factors such as comorbidities, immunosenescence, and other pathogen factors. Pathogen factors can include multidrug resistance and biofilm formation. Appropriate treatment strategies may be delayed due to misidentification. Achromobacter xylosoxidans, Pseudomonas aeruginosa, Burkholderia cepacia and Stenotrophomonas maltophilia have all been mistakenly identified as one another due to similar growth requirements, standard media appearance and antibiotic sensitivity patterns. This case investigates Achromobacter xylosoxidans bacteremia in a geriatric patient secondary to an unknown etiology in a long term care facility. The patient developed fever and tachycardia, and was transferred to an acute care facility to be evaluated for sepsis. Over the course of several days, the patient deteriorated and developed tachypnea, leukocytosis, hypokalemia, hypotension, coagulopathy, hyperlactatemia, hypomagnesemia, acute renal and hepatic failures. The patient's past medical history was significant for anemia, seizures, paralysis, hypertension, diabetes mellitus, respiratory failure, cognitive impairment, multiple decubital ulcers, multiple cerebral infarcts and systemic lupus erythematosus. Past surgical history included tracheostomy and percutaneous endoscopic gastrostomy. Medication history prior to admission included docusate, pantoprazole, multivitamins, levetiracetam, chlorhexidine, acetaminophen, ipratropium-albuterol and ferrous sulfate, aspirin, ascorbate, metoprolol, atorvastatin, zinc sulfate, bacitracin, collagenase and nystatin-triamcinolone. Imaging displayed right basilar pleural effusion and/or parenchymal disease indicative of pneumonia. Empiric treatment with cefepime and vancomycin was initiated to cover decubiti, bacteremia, and pneumonia. Blood, stool and sputum cultures revealed Achromobacter xylosoxidans,

Clostridium difficile and Pseudomonas aeruginosa respectively. Urine and wound cultures were negative. Achromobacter xylosoxidans bacteremia was initially treated with intravenous cefepime which was then switched to meropenem. The other bacterial infections were managed appropriately. The patient recovered, infections resolved, and the patient was subsequently discharged to a long-term care facility. The final microbiology report revealed bacterial sensitivity to cefazolin, ertapenem, ampicillin-sulbactam, ceftazidime-avibactam, ceftazidime, imipenem, meropenem, piperacillin-tazobactam, sulfamethoxazole-trimethoprim, and amoxicillin-clavulanate. These findings are remarkable given the extensive resistance profile typical of Achromobacter species. To our knowledge this is the only reported isolate with susceptibility to cefazolin.

Methods:

Results:

Conclusion:

Submission Category: General Clinical Practice

Submission Type: Case Report

Session-Board Number: 11-258

Poster Title: Transdermal scopolamine for treatment of paliperidone-induced sialorrhea

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Purpose: Antipsychotic agents are difficult to differentiate on efficacy alone, placing the decision of drug therapy primarily on adverse effect profiles given individual patient characteristics. These adverse effects commonly include sedation, extrapyramidal symptoms, orthostasis, hyperprolactinemia, and weight gain. Many antipsychotics have potent anticholinergic properties and tend to cause dry mouth, constipation, and blurred vision. One paradoxical adverse effect of some antipsychotics is sialorrhea; this is most often seen and reported with clozapine specifically. The theory behind clozapine-induced sialorrhea involves muscarinic M4 receptor agonism and adrenergic alpha-2 receptor antagonism by clozapine, both leading to an increase in salivary flow. The reported incidence of hypersalivation in patients taking clozapine is up to 48 percent. However, a recent study found hypersalivation to occur in 92 percent of clozapine users. Excess drool can soak clothes and furniture, cause nighttime awakenings, and hinder speaking, having an overall negative impact on patients' quality of life. Hypersalivation can also lead to more life-threatening complications, such as choking and aspiration. Unfortunately, there is currently insufficient data to confidently determine appropriate and effective pharmacological interventions for clozapine-induced hypersalivation. More so, clozapine is often a last line agent, and there is minimal data that reports on other antipsychotics' ability to induce hypersalivation, despite the similar properties among these agents. A PubMed search of clozapine and sialorrhea produces 135 results, while paliperidone and sialorrhea produces none. The following case report examines an incidence of paliperidone-induced sialorrhea and subsequent treatment with scopolamine. A 62-year-old white male with schizoaffective disorder was admitted to an inpatient geriatric psychiatry unit. His past medical history included hypertension, diabetes mellitus, hyperlipidemia, anemia, gastro-esophageal reflux disease, vitamin D deficiency, and movement disorder (likely

antipsychotic-induced). The patient's previous antipsychotic drug therapy regimen included chlorpromazine, haloperidol, olanzapine, and risperidone, of which he was occasionally compliant. Relevant labs were within normal limits (other than the documented anemia), including his creatinine clearance, which was approximately 85 mL/minute. After oral tolerability of risperidone was confirmed, the patient was started on the long-acting injectable paliperidone palmitate (Invega Sustenna). A few days prior to his next scheduled dose the following month, nursing progress reports began noting excessive drooling by the patient, objectively recorded as drool stains on his shirt and a towel wrapped around him to catch drool. A week after his second paliperidone injection, the patient reported the drool being bothersome. Ten days after that first complaint, in an attempt to block the cholinergic stimulation of the salivary glands, he was given the anticholinergic scopolamine hydrobromide (Transderm-scop) 1.5 milligram transdermal patch. After just a couple of days, progress notes noted a reduction in drooling. Patient continued to receive monthly paliperidone injections for three doses (until discharge) and scopolamine patch every three days for four doses (until patient refused). Patient tolerated the scopolamine patch well and appeared to experience minimal anticholinergic effects; no dizziness, falls, or urinary retention were reported. The successful reduction in paliperidone-induced sialorrhea by scopolamine introduces its use for treatment of paliperidone-induced hypersalivation.

Methods:

Results:

Conclusion:

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-259

Poster Title: Performance on a composite quality measure for optimal diabetes care in a patient centered medical home.

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Purpose: Quality measure outcomes incentivize higher caliber patient care by scaling reimbursement based on achievement of clinical outcomes. Lifetime Health Medical Group (LHMG) is a primary care physician group and National Committee for Quality Assurance (NCQA) level 3 patient-centered medical home (PCMH). In 2018, the reimbursement structure will transition from a set of individual quality measures for patients with type 1 or type 2 diabetes mellitus to a composite quality measure. A composite measure may be more difficult to attain and reimbursement negatively impacted. The objective of this study is to assess current performance on this new composite quality measure.

Methods: This retrospective record review will be submitted to the Institutional Review Board for approval prior to commencement. The electronic health record (EHR) will identify LHMG patients that are 18 to 75 years of age with type 1 or type 2 diabetes mellitus. The following data will be collected: patient age, most recent HbA1c, most recent blood pressure, presence of nephropathy or nephropathy screen and dilated retinal exam, and medication adherence as measured by proportion of days covered (PDC) within the calendar year. The goal HbA1c and blood pressure defined as “at goal” result is a measurement less than 8% and less than 140/90 mmHg, respectively. This retrospective record review will be used to assess performance on the new composite measure for LHMG as a whole and individually across its 3 Western New York (WNY) locations. The individual components of the composite measure will also be assessed to determine which parameters are most likely to reduce performance on the overall composite measure. Following comprehensive evaluation of our current performance, a plan for improved performance will be developed.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-260

Poster Title: Assessing the effect of the International Medical Prevention Registry on Venous Thromboembolism (IMPROVE) risk assessment model on the use of venous thromboembolism prophylaxis

Primary Author: Sweta Patel, Long Island Jewish Medical Center, NY; **Email:** spatel56@northwell.edu

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Purpose: The International Medical Prevention Registry on Venous Thromboembolism risk assessment model (IMPROVE RAM) is an evidence-based model used to determine the risk of venous thromboembolism (VTE) and the need for VTE prophylaxis in hospitalized medical patients. Education on use of IMPROVE RAM was performed at the hospital in July 2016. Since then, increased use of the score to determine the need for VTE prophylaxis has been encouraged. The objective of this study is to assess the effect of the implementation of IMPROVE RAM within a tertiary care, teaching hospital on the use of VTE prophylaxis in hospitalized medical patients.

Methods: This study will be a chart review submitted to the Institutional Review Board for approval. The electronic medical record (EMR) system will be used to identify patients that were admitted to the hospital and followed by the medicine team prior to and after IMPROVE RAM education. Patients will be divided into those prior to education who were not exposed to the IMPROVE RAM (non-RAM) and those after education who had utilized the IMPROVE RAM (RAM) to determine the need for VTE prophylaxis. The primary outcome will be the proportion of patients receiving VTE prophylaxis in the RAM arm versus the non-RAM arm. Secondary endpoints will include proportion of patients that had an IMPROVE score documented after education, proportion of patients that had mechanical prophylaxis, prevalence of additional VTE risk factors not included in the IMPROVE score, proportion of patients on antiplatelet agents, and incidence of new VTE or bleeding events during admission. Only patients 18 years of age or older followed by the medicine team during the hospital stay will be eligible. IMPROVE

score must also be documented in the EMR for the RAM arm. Patients requiring full anticoagulation or diagnosed with suspected or confirmed VTE on admission will be excluded.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-261

Poster Title: Effect of dispensing inhalers with or without pharmacist counseling to patients admitted with chronic obstructive pulmonary disease (COPD) exacerbations on thirty-day COPD readmission rates

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Purpose: Our hospital will be creating a new standard of care whereby all patients will be discharged home with their inpatient inhalers properly labeled for outpatient use. This study will first assess the impact of dispensing inhalers at discharge to patients admitted with COPD exacerbations by comparing post-implementation endpoints to those in a pre-implementation (retrospective) cohort. Additionally, within the prospective post-implementation cohort, patients will be randomized to receive pharmacist counseling or receive standard of care. The impact on 30-day COPD readmission rates will be compared among the three groups.

Methods: This study has been submitted to the Institutional Review Board for approval. Patients admitted to the hospital with a COPD exacerbation will be identified retrospectively and prospectively using the hospital's COPD Analytics Dashboard. Patients will be excluded if they are hospice care, discharged against medical advice, unable to give informed consent, cognitively impaired, or expected to reside in a long-term care facility. The post-implementation group will receive properly labeled inhalers to take home at discharge. Enrollment will take place for four months based on practicability, not on formal power calculations. The pre-implementation group will be oversampled for the past year. Data collection will include: gender, race, sex, age, LACE score, home oxygen, length of stay, past medical history, smoking history, inhalers on admission, inhalers on discharge, mortality, 30-day COPD and 30-day all-cause readmission status, and HCAHPS scores related to medication metrics. All data will be de-identified and confidentiality will be maintained. The two post-

implementation groups include: inhalers labeled at discharge or inhalers labeled at discharge plus pre-discharge pharmacist counseling. Following initial consent, randomization will take place using the Biostatistics Randomization Management System (BRMS) and a second consent form will be collected for those patients randomized to receive pre-discharge pharmacist counseling. Thirty days post-discharge, internal data will be reviewed to assess readmission status or patients will receive a follow-up phone call to assess outside hospital readmissions.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-262

Poster Title: Assessing the risk of nephrotoxicity associated with non-renally adjusted intravenous polymyxin B compared to traditional dosing

Primary Author: Bejoy Maniara, Long Island Jewish Medical Center, NY; **Email:** bejoymaniara@gmail.com

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Purpose: Antibiotics are paramount in reducing morbidity and mortality secondary to bacterial infections, but they are associated with the development and propagation of multidrug-resistance. To combat this, broad-spectrum antibiotics with significant toxicities, such as polymyxin B, are forcibly utilized. Due to nephrotoxicity, polymyxin B was inadequately studied and seldom utilized. Prior data states polymyxin B is renally cleared; newer data suggests polymyxin B is predominantly non-renally cleared. This project aims to determine whether non-renally adjusted doses of intravenous polymyxin B produce a similar incidence of nephrotoxicity as renally adjusted doses of intravenous polymyxin B in patients with multidrug-resistant Gram-negative infections.

Methods: This study has been submitted to the Institutional Review Board for approval. This will be a retrospective observational chart review of the electronic medical record, evaluating patients who received intravenous polymyxin B at any dose. The aim is to enroll approximately 50 subjects in each arm. Exposed subjects received non-renally adjusted doses of polymyxin B, while unexposed subjects received renally adjusted doses of polymyxin B. Information to be collected may include (not limited to): demographics, height, weight, care setting, serum creatinine, comorbidities, concomitant nephrotoxic agents, site of infection, indication for polymyxin B, dose of polymyxin B, concomitant antibiotics, duration of therapy, length of stay, outcome of infection (resolution or failure), adverse effects, need for renal replacement therapy, all-cause mortality, 7- and 30-day readmission with acute kidney injury, time to nephrotoxicity, albumin level, bilirubin level, and concomitant ascorbic acid. Data will be confidentially recorded without patient identifiers. Survival analyses will compare time until acute kidney injury. Subjects discharged without having developed acute kidney injury will be

censored at the day of discharge. Cox proportional hazards multivariable regression will determine whether an association exists between polymyxin B dosing method and acute kidney injury incidence. Relative risk, odds ratios, and 95% confidence interval will be computed.

Results: Pending

Conclusion: Pending

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-263

Poster Title: Cefoxitin vs piperacillin/tazobactam for acute appendicitis in pediatric patients

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Purpose: Appendicitis is a medical emergency that usually necessitates surgery and antimicrobial therapy in pediatric patients. There is a lack of consensus regarding the optimal choice of antimicrobial therapy for pediatric appendicitis, with varying recommendations in the IDSA guidelines and PPAG Red Book. Recent studies have shown that narrow-spectrum and broad-spectrum antimicrobials produce similar outcomes in the treatment of pediatric appendicitis. At our institution, cefoxitin has supplanted piperacillin/tazobactam for the management of pediatric appendicitis. The purpose of this study is to compare readmission rates, length of stay, and fever duration among patients treated with either cefoxitin or piperacillin/tazobactam for pediatric appendicitis.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a single-center, retrospective study comparing cefoxitin to piperacillin/tazobactam for prophylaxis and treatment of acute appendicitis in pediatric patients. We will review charts of surgically managed pediatric patients between the ages of 3 to 18 years with a confirmed diagnosis of appendicitis. Two groups of patients will be compared: those who received piperacillin/tazobactam from 8/1/14-8/1/15 to those who received cefoxitin from 9/1/15-9/1/16. Patients will be excluded if they received antimicrobial therapy for other indications or if they received antimicrobial therapy at another facility prior to transfer. Data collection will include age, gender, race, insurance status, duration of antimicrobial therapy, length of stay, duration of fever and readmission within 30 days of discharge. The primary outcome will be treatment failure defined as inpatient readmission necessitating abdominal surgical procedure, percutaneous drainage, wound infection, or other complication within 30 days. Secondary outcomes will include hospital length of stay and duration of fever. Sub-group analyses will be

performed in patients with appendiceal perforations and patients without appendiceal perforations.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-264

Poster Title: Enoxaparin versus rivaroxaban for post-orthopedic surgical patients with a body mass index greater than or equal to 35 (RENOX35).

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Purpose: The occurrence of venous thromboembolism (VTE) is estimated to be 50-60 percent in orthopedic surgical patients if optimal pharmacologic prophylaxis is not used. Studies have shown that there is a positive correlation between the risk of VTE and Body Mass Index (BMI) and a negative correlation between BMI and anti-Xa levels. The objective of this study is to assess whether a non-weight- based anticoagulant, rivaroxaban, is superior to a weight- based anticoagulant, enoxaparin, in obese patients for post-operative deep-venous thromboembolism (DVT) prevention in total knee and hip arthroplasty procedures.

Methods: This study will be submitted to the Investigational Review Board for approval. This will be a single site, retrospective study comparing post-operative VTE rates between prophylactic therapy with either oral rivaroxaban or subcutaneous enoxaparin for patients with a BMI greater than 35. A computer generated report containing diagnosis codes for hip or knee orthopedic surgery, in patients with a BMI ≥ 35 will be used to identify patients. The de-identified data that will be collected includes patient BMI, age, VTE prophylaxis received, type of surgery, hospital occurrence of VTE, and readmission in 90 days. Readmission rates or hospital occurrence of related VTE will be analyzed.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-265

Poster Title: Aripiprazole vs. quetiapine for hyperactive delirium in a medical intensive care unit: a retrospective analysis

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Purpose: Delirium remains a frequent challenge for the practicing intensivist. The mainstays of treatment include utilizing a number of non-pharmacologic therapies but antipsychotics are frequently employed when these strategies fail. Both quetiapine and aripiprazole, atypical antipsychotics, are utilized at our institution for delirium. Aripiprazole is reserved for patients with pre-treatment QT-prolongation owing to its lessened effect on the QT-interval. We will gather data from patients in the medical intensive care unit (MICU) who were treated with these medications for delirium. We predict that aripiprazole will be as effective as quetiapine and serve as a safer alternative for patients with baseline QT-prolongation.

Methods: This retrospective single-center equivalency study has been submitted to the institutional review board. We will review all patients admitted to the MICU on aripiprazole or quetiapine from September 2014 to September 2016. We will collect baseline characteristics for comparison as well as any identified risk factors for delirium discussed in the 2013 Pain, Agitation, and Delirium (PAD) guidelines. We will include any patient age 18 years or greater who were on either aripiprazole or quetiapine. Patients will be excluded if they are older than 85 years, on an antipsychotic prior to admission, pregnant or breastfeeding, or are thought to be experiencing delirium attributed to a drug withdrawal syndrome (e.g., alcohol). Our primary outcome will be ICU length of stay (LOS) and secondary outcomes will include hospital LOS, number of ventilator-dependent days, and any significant change in the pre-treatment QTc as defined by an increase of more than 60 milliseconds.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-266

Poster Title: Clinical outcomes of an inpatient pharmacist-directed anticoagulation service in a community hospital

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Purpose: In 2008, the Joint Commission released a National Patient Safety Goals document that requires institutions to implement practices that reduce the likelihood of patient harm associated with use of anti-coagulation therapy. Common causes of errors with anticoagulants are knowledge deficits, failure to follow policy/procedure/protocol, and communication issues. In order to improve anti-coagulation management and safety, our institution implemented an inpatient pharmacist-directed anti-coagulation service. The primary objective will be to analyze time in therapeutic range (TTR) for the patients on warfarin and appropriate renal dose adjustment for other anticoagulants, including rivaroxaban, apixaban, edoxaban, and dabigatran.

Methods: This study is pending Institutional Review Board approval. This is a prospective/retrospective cluster randomized study which will include all adult patients who are part of the internal medicine teaching service either being initiated on an oral anticoagulant or continued on home anti-coagulation therapy during hospitalization. Dialysis patients, pregnant females, and patients managed by the hematology team will be excluded. The primary study outcome will be to compare the percentage of time warfarin patients were within the therapeutic range, and appropriateness of renal dose adjustment for apixaban, edoxaban, rivaroxaban, and dabigatran between the prospective and retrospective groups. The retrospective data will be extracted from an existing hospital software program, and will include goal INR (International Normalized Ratio), patient demographics, diagnosis, medication dosage, and appropriateness of renal dose adjustment. This study will involve collaboration with the internal medicine teaching team in order to gather prospective data on patients whose anticoagulant dose required pharmacist intervention. After a patient is initiated on an

anticoagulant by the medical team, warfarin doses will be adjusted using protocol implemented by the hospital, whereas other applicable anticoagulants will be adjusted based on renal function by the centralized or clinical pharmacists. Documentation of recommendations will be made directly into the patient's chart, and available to the physicians.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-267

Poster Title: Effect of code cart rearrangement on compliance with advanced cardiac life support (ACLS) guidelines

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Purpose: Given the high mortality rate associated with cardiac arrest, the proper medical management of cardiac arrest patients is critical, and adherence to current guidelines is essential to maximize chances for survival. The purpose of this study is to evaluate the effect of rearranging code carts, based on the recommendations of the 2015 American Heart Association (AHA) Cardiopulmonary Resuscitation and Emergency Cardiac Care (CPR & ECC) Guidelines, on guideline compliance. The results of this study will help guide future code cart adjustments, as well as identify areas where further education is needed.

Methods: This study has been approved by the Institutional Review Board. Code records from January 2016 through July 2016 have been obtained (prior to code cart rearrangement). Patients will be included if they were treated for cardiac arrest (asystole, pulseless electrical activity, ventricular fibrillation, or pulseless ventricular tachycardia), were ≥18 years of age, had at least one drug from the code cart administered, and for whom the code record sheet was completely and properly filled out. Data to be collected includes: age; cardiac rhythm(s); name of physician leading the code; name, dose, route, and time of drugs administered; code outcome; and location of patient at time of arrest. Code records will then be obtained post-code cart rearrangement (August 2016 through December 2016). The same information described above will again be collected. The data will then be analyzed to determine the percentage of drugs administered correctly according to ACLS guidelines, time to administration of first drug, and location of drugs administered (code cart, automated dispensing cabinet, or pharmacy). The results will then be compared for pre- and post-code cart rearrangement, and for in-hospital versus out-of-hospital arrests.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-268

Poster Title: Awareness of medication costs and impact of pricing transparency on prescribing practices in Type 2 Diabetes Mellitus: Preparing for payment model reform

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Purpose: According to the National Diabetes Statistics Report 2014, an estimated 29.1 million Americans (9.3%) have diabetes. The burden on the health care system includes $176 billion in direct medical cost per year. The objective of this study is to evaluate primary care prescribers' awareness of medication costs and the impact of cost transparency on their prescribing practices for Type 2 Diabetes Mellitus patients. Additionally, set the stage for further considerations on care delivery as we shift payment models and strive to design optimal metrics of quality as well as total cost of care.

Methods: This study will be submitted to the Institutional Review Board for expedited approval. Prescribers will be surveyed about their prescribing practices using a hypothetical case involving a patient with Type 2 Diabetes Mellitus. This disease state offers well-established practice guidelines and a variety of medication combinations with significant variance in cost and tolerability with smaller differences in terms of biomarker-measured efficacy. This online survey was developed to collect and evaluate the prescribing choices of primary care providers as it pertains to add-on therapy to metformin in Type 2 Diabetes Mellitus patients. The survey will be distributed through various residency programs throughout the country and is designed to provide information in a segmented basis, revealing one additional piece of information at a time. Information will include A1C lowering percentages of various drug classes, guideline recommended therapy, typical adverse reactions, and the average wholesale price of one month and one year's supply of the various classes of medications. The survey will also include general questions pertaining to the prescriber's current awareness of the total cost of medications that they routinely prescribe to patients. Lastly, it will investigate how cost transparency, at the time of prescribing, impacts the selection of these medications.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-269

Poster Title: Medication use evaluation of ceftolozane/tazobactam and ceftazidime/avibactam for multidrug-resistant (MDR) Gram-negative infections in an urban academic medical center

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Purpose: The rise in resistant Gram-negative bacteria is a major concern and has led to difficulty in treating MDR infections. Ceftolozane/tazobactam and ceftazidime/avibactam are two novel beta-lactam/beta-lactamase inhibitor combination agents with activity against selected resistant Gram-negative pathogens, including Enterobacteriaceae, Pseudomonas aeruginosa and/or carbapenemase-producing Klebsiella pneumoniae. Both antibiotics are usually reserved as last-line treatment, restricted to patients who have limited or no alternative therapies. At our institution, a formal infectious diseases evaluation is required for use. The purpose of this study is to evaluate the usage of ceftolozane/tazobactam and ceftazidime/avibactam for the treatment of MDR Gram-negative infections.

Methods: In this retrospective chart review, patients who received ceftolozane/tazobactam or ceftazidime/avibactam between January 2016-November 2016 will be identified using Sentri 7. Information collected will include patient demographics, type of infection, microbiology data, clinical outcome, medication dose/frequency/duration of therapy, hospital length of stay, and adverse events, etc. The data will be analyzed using descriptive statistics. To maintain patient confidentiality, all data will be de-identified with each patient receiving a unique numerical code.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-270

Poster Title: Ceftaroline utilization review for methicillin-resistant staphylococcus aureus (MRSA) infections

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Purpose: MRSA-associated infections, such as bacteremia and infective endocarditis, have been related to increased morbidity and mortality. Challenges to treatment have increased alongside the growing resistance to antibacterial agents. Ceftaroline is a fifth-generation cephalosporin that was approved by the FDA in 2010 for the treatment of complicated skin and skin structure infections and community-acquired bacterial pneumonia. Furthermore, it exhibits anti-MRSA activity and has demonstrated efficacy in MRSA bacteremia, endocarditis, and osteomyelitis. The use of ceftaroline requires a formal infectious diseases consultation at our institution. The objective of this study is to review the usage of ceftaroline in MRSA infections.

Methods: All adult patients who received ceftaroline for greater than or equal to 48 hours will be included in this retrospective review. All patient data will be obtained from the electronic medical record systems CareCast and Epic. The following data will be collected: patient demographics, creatinine clearance, history of MRSA, source and type of infection, organism, minimum inhibitory concentrations, antibiotics prior to ceftaroline therapy, reason for switching to ceftaroline, dose, frequency, duration, time to first negative blood culture, microbiological data, clinical outcome, etc. Consults provided by the infectious disease specialists will be reviewed and documented as well. Any patient information collected will be de-identified and maintained confidentially. Additionally, descriptive statistics will be used to analyze the data obtained.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-271

Poster Title: Evaluation of treatment, duration, and outcomes of urinary tract infections in kidney transplant recipients

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Purpose: Urinary tract infection (UTI) is the most common bacterial infection following kidney transplantation. It is not uncommon for renal transplant recipients to receive UTI treatment, regardless of colony forming unit (CFU) count or presence of symptoms. This practice can lead to unnecessary exposure to antibiotics as well as increase the risk for antibiotic resistance. The purpose of this study is to evaluate the appropriateness of UTI treatment, with regard to antibiotic choice, dose and duration, within the first year post-renal transplantation, and compare the incidence of antimicrobial resistance in those who receive appropriate vs. inappropriate or unnecessary treatment.

Methods: Patients who received a kidney transplant from January 2012 to June 2015 will be retrospectively reviewed using the electronic medical record system. Adults (greater than 21 years old) with documented positive urine culture within the first year post-transplantation will be included. Patients with urinary fungal infections, incomplete culture and susceptibility data, follow up of less than 1 year post-transplant, and recipients of combined organ transplants will be excluded. Patient data collection will include demographics (age, gender, indication for transplant, duration of dialysis pre-transplant, type of transplant, induction therapy and dosing , and number of transplants); date of UTI diagnosis; causative organism and antimicrobial susceptibility, antibiotic agent prescribed, dose, and treatment duration; incidence of UTI recurrence; development of antibiotic resistance; immunosuppressive therapy and dosing at the time of UTI; incidence of biopsy proven acute rejection; serum creatinine (SCr) and estimated glomerular filtration rate (eGFR) 1 month after each UTI and at 12 months post-transplant; concomitant administration of prostatitis prophylaxis; and incidence of cytomegalovirus, BK virus, and C. difficile infections within the first post-transplant year. Patient information will be stored confidentially and all collected data will have patient identifiers removed.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-272

Poster Title: Evaluation of the screening and treatment practices for bone health in prostate cancer patients receiving adjuvant androgen deprivation therapy

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Purpose: The NCCN Clinical Practice guidelines and ESMO Clinical Practice guidelines for prostate cancer recommend that patients initiated on androgen deprivation therapy (ADT) be evaluated for bone health at baseline regardless of age or sex with periodic follow-up. Guidelines encourage pharmacological therapy if definitive diagnosis of osteoporosis or risk for bone loss or fracture exists. Prostate cancer growth is driven by androgen hormones. Suppression of such hormones benefits cancer therapy but negatively affects bone metabolism. The objective of this study is to determine if screening and treatment of prostate cancer patients on ADT complies with NCCN or ESMO guidelines.

Methods: This retrospective chart review study using an electronic medical record system will identify prostate cancer patients started on androgen deprivation therapy in 2014 at Montefiore Medical Center. Current clinical practice of bone mineral density (BMD) screening, fracture risk analysis, and treatment with Denosumab, Pamidronate, or Zoledronic acid in patients started on androgen deprivation therapy will be evaluated. ADT therapy to be included in this analysis includes Degarelix acetate, Goserelin acetate, and Leuprolide acetate. Data to be collected includes but is not limited to patient age, diagnosis, anti-androgen therapy, FRAX analysis, DEXA imaging, serum 25 (OH) levels, T score, pharmacological therapy chosen, and documented reason for noncompliance. Patient information will be de-identified and maintained confidentially. Initiation of pharmacological therapy is strongly recommended in patients whose T score is less than or equal to -2.0 at certain sites, if the FRAX 10-year absolute risk of fracture is greater than 20% for any major fracture or greater than 3% for hip fracture, or if T score is less than -1.5 in individuals who have lost significant bone mineral density. Therefore, data will be analyzed to confirm bone health care as compliant, noncompliant, and noncompliant but clinically appropriate with NCCN or ESMO guidelines. Data yield may

establish requirement of a new protocol implementation within the institution or confirm current bone health care is appropriate.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-273

Poster Title: Evaluation of the utilization of vasopressin in shock

Primary Author: Teresa Poon, Mount Sinai Beth Israel, NY; **Email:** tpoon@chpnet.org

Additional Author (s):
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Daryl Paris

Purpose: Vasopressin, also known as antidiuretic hormone, is an endogenous hormone that regulates both volume status by altering water reabsorption, and blood pressure through vasoconstriction. In the setting of septic shock, vasopressin levels are acutely elevated and then subsequently decrease as the state of shock is prolonged. Studies have shown benefits with low-dose vasopressin as an adjunctive agent to norepinephrine when introduced in early and less severe septic shock, leading to decreased mortality when compared with norepinephrine alone. The objective of this study is to evaluate how vasopressin is being utilized at Mount Sinai Beth Israel in the management of shock.

Methods: A retrospective chart review will be performed in which adult patients are selected based on a medication utilization report of vasopressin at our center prior to September 1, 2016. The objective of this chart review is to analyze the appropriate use of vasopressin based on the indication and place in therapy amongst other vasopressors. Data regarding the order of initiation and discontinuation of vasopressin, as well as the doses of other vasopressors upon vasopressin initiation will be evaluated. Pertinent information such as the median dose of vasopressin used, volume of fluids administered, and mean arterial pressure at time of initiation will be reviewed. In addition, baseline demographic data, lengths of hospital and intensive care unit stay, and adverse events will be collected.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-274

Poster Title: Fixed versus weight-based dosing of rasburicase for prophylaxis and treatment of malignancy-associated hyperuricemia

Primary Author: Victoria Huang, Mount Sinai Beth Israel, NY; **Email:** vhuang@chpnet.org

Additional Author (s):
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Purpose: Tumor lysis syndrome (TLS) is a complication of chemotherapy caused by release of tumor cell contents such as uric acid into the circulation. As a recombinant form of urate oxidase, rasburicase degrades uric acid and can be used for prevention and treatment of TLS-induced hyperuricemia. Although the package insert recommends weight-based dosing for up to 5 to 7 days, there is evidence to support that a single, fixed, low-dose is equally effective. The purpose of this study is to assess the use of fixed versus weight-based dosing of rasburicase in malignancy-associated hyperuricemia pre and post implementation of a hospital protocol.

Methods: Adult cancer patients at Mount Sinai Beth Israel that received rasburicase for the prevention or treatment of TLS-induced hyperuricemia between February 1, 2015 and August 19, 2016 will be included in the analysis. Patient charts will be evaluated for demographics, hospital course, cancer type, chemotherapy regimen, TLS risk, rasburicase regimen, renal function, pertinent laboratory values, and adverse effects. The primary endpoint for this study will be the total cost of rasburicase therapy. Secondary endpoints will include the normalization of uric acid levels at 24, 48 and 72 hours, incidence of acute kidney injury, and rate of adverse effects including methemeglobinemia and hemolysis. Descriptive and inferential statistics will be used to analyze the results as appropriate.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-275

Poster Title: Evaluation of calcitonin use in the management of hypercalcemia of malignancy at an academic teaching hospital

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Additional Author (s):
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Purpose: Hypercalcemia is a complication of malignancy that is associated with increased morbidity and mortality. Synthetic calcitonin, which functionally antagonizes the effects of parathyroid hormone, lowers calcium levels by inhibiting osteoclast bone resorption and increasing urinary calcium excretion. In patients with severe, symptomatic hypercalcemia, calcitonin is used in addition to hydration and bisphosphonates when rapid reduction of calcium levels is desired. However, administration beyond 72 hours is not recommended due to development of tachyphylaxis. The objective of this study is to evaluate calcitonin use in the management of malignancy-associated hypercalcemia at Mount Sinai Beth Israel.

Methods: A single-center, retrospective chart review will be performed in adult patients that received calcitonin between January 1, 2014 and October 31, 2016. Patients that received either intramuscular or subcutaneous calcitonin for malignancy-associated hypercalcemia will be identified from a medication utilization report. The primary endpoint is the proportion of patients with appropriate use of calcitonin for the management of malignancy-associated hypercalcemia. Secondary endpoints include the dose of calcitonin, total doses received per patient, and reductions in serum calcium levels. Data regarding patient demographics, hypercalcemia symptoms, hydration status, bisphosphonate therapy, dosage and duration of calcitonin therapy, and pertinent laboratory values (eg. albumin, calcium, parathyroid hormone, parathyroid hormone-related protein, and 1,25-dihydroxyvitamin D) will be collected. Descriptive statistics will be used to analyze the results.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-276

Poster Title: Evaluation of daptomycin use at Mount Sinai Beth Israel

Primary Author: Oludamilola Olugbile, Mount Sinai Beth Israel, NY; **Email:** oolugbile@chpnet.org

Additional Author (s):
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Purpose: Daptomycin is a cyclic lipopeptide with activity against a broad spectrum of gram-positive bacteria, including methicillin-resistant Staphylococcus aureus (MRSA), and vancomycin-resistant Enterococcus (VRE). Daptomycin depolarizes the bacterial cell membrane causing cell destruction. Dosing regimens of 4-12 mg/kg/day are utilized for various indications. Weekly creatinine phosphokinase (CPK) monitoring is recommended as it causes myopathy, muscle weakness, and rhabdomyolysis. At Mount Sinai Beth Israel, daptomycin is fully-restricted to protect its activity and limit cost. The goal of this study is to evaluate appropriate use of daptomycin at Mount Sinai Beth Israel in order to identify areas for improvement.

Methods: This will be a retrospective evaluation of adult patients, aged 18 years and older, that received at least one dose of daptomycin at Mount Sinai Beth Israel between January 1st and March 31st, 2016. The primary endpoint is the percentage of patients deemed to be appropriately treated with daptomycin therapy based on set criteria. Secondary endpoints include the indications for daptomycin use, the proportion of patients with appropriate daptomycin dosing, the number of approvals per provider, the appropriateness of provider approvals, and a description of CPK monitoring. Appropriate rationale for daptomycin use will be defined as MRSA infections unresponsive to vancomycin, VRE infections, vancomycin-related adverse reactions and/or allergy, and daptomycin use as first dose for outpatient parenteral antimicrobial therapy. Data will be collected through electronic chart review and will include the dosing regimen, rationale for daptomycin use, infectious indication, microbiological information, patient demographics, renal function, and CPK levels. Data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-277

Poster Title: Pharmacy directed strategy implementation to improve Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores in pain management and communication about medications domain

Primary Author: Samia Ahsan, Mount Sinai Beth Israel Brooklyn, NY; **Email:** samiahsan11@gmail.com

Additional Author (s):

Purpose: The Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) score in communication about medicines domains has shown to influence readmission rates in pneumonia and heart failure patients in the past. Communication regarding pain management also has a significant impact on patients' perception of care during hospital stay regardless of their pain level. This project was designed to implement strategies to improve frequency and quality of communications between nurses and patients regarding pain management and medication therapy. The objective of this project is to improve patient satisfaction with communication about medications and pain management by enhancing nursing communication to patients.

Methods: One general medicine unit will be chosen with non-critically ill patients to maximize nurse and patient communication. At the initiation of the project, a nursing education on teaching techniques and pain management will be developed and completed by a pharmacist. A database with simplified patient education material based on drug classes will be made available at the nursing station to assist during communication about medications. Nurses will be asked to inform each patient about new medications prior to administration. In order to improve pain management, at each shift change, nurses will be asked to record patient's current pain level, goal pain level and last dose received. Nurses will also follow up on the pain level hourly. A work group will be formed including health care professionals and leaders from both nursing and pharmacy to implement these strategies and assess nursing compliance. Results will be assessed by the HCAHPS score result from following quarter as compared to the baseline score for both of these domains.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-278

Poster Title: Pharmacist-led identifications of factors related to 30-day readmissions at a community hospital

Primary Author: Ida Yenoukian, Mount Sinai Brooklyn, NY; **Email:** ida.yenoukian@mountsinai.org

Additional Author (s):
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Purpose: The Center for Medicaid and Medicare reports that one in five patients discharged from the hospital will be readmitted within 30 days. Although, readmission rates have been slowly decreasing, the national average for 30-day all-cause readmission is 17.5%. Reducing readmission rates is an important part of improving patient outcomes. The objective of this study is to identify factors that influence 30-day all-cause readmission.

Methods: This study will be submitted to the Institutional Review Board for approval. A system-generated report will identify hospital-wide all-cause-readmissions within 30-days past discharge. Data will be collected by interviewing patients utilizing a standardized survey to establish potential causative factors that lead to readmission. All data will be recorded with patient identifiers and maintained confidential. The primary endpoint is all causative factors related to readmission with emphasis on medication-related readmissions. Secondary endpoints that will be evaluated are condition specific core measures related to pneumonia, chronic obstructive pulmonary disease (COPD), and heart failure. This study will identify potential factors related to all-cause readmission and assist in improving the transitions of care discharge process.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-279

Poster Title: Implementation and evaluation of a vancomycin dosing per pharmacy protocol in large academic medical center

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Additional Author (s):
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Purpose: Monitoring and dosing vancomycin appropriately is pivotal in securing positive patient outcomes. Drawing levels at optimal times and dosing accordingly leads to decreased adverse events and prevention of bacterial resistance. A previous medication use evaluation (MUE) was conducted in an inpatient oncology unit to assess vancomycin dosing and monitoring per pharmacy. The primary objective of this study is to gain an understanding of the efficacy of vancomycin dosing per pharmacy based on outcomes in the pilot units. The goal is to expand the service to other inpatient units and ultimately implement a hospital-wide vancomycin dosing per pharmacy protocol.

Methods: A medication use evaluation was conducted to assess physician based vancomycin dosing and revealed improper dosing and monitoring. This led to the conception of the vancomycin per pharmacy protocol. The vancomycin per pharmacy program was initiated in two inpatient oncology units in 2013 and is now being expanded to additional units. Education will be provided to physicians, nurse practitioners, and pharmacists through the use of previously developed in-service materials. Modifications will be made to the current in-service materials including the addition of area under the curve (AUC) vancomycin education for pharmacists. Pharmacists conducting the service will keep track of data through computerized chart logging and monitoring sheets developed specifically for the routine follow-ups. All patients receiving at least one dose of vancomycin will be included in the data. The data collection parameters are patient age, weight, gender, serum creatinine and calculated creatinine clearance, treatment dose and time, vancomycin levels and time the level was

drawn. The two treatment groups are allocated as dosing per pharmacy and traditional dosing. Traditional dosing is based on a physician-managed treatment approach as opposed to the pharmacist-managed per pharmacy protocol. The outcomes are the percentage of patients receiving correct initial doses, frequency, timing of levels, the percentage of patients with levels obtained who were on therapy for five days or more, and the percentage of patients achieving therapeutic range.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-280

Poster Title: Outcomes associated with the use of revised risk assessment strategies to predict resistance in community onset pneumonia: A stewardship perspective

Primary Author: Ron Stern, Mount Sinai St. Luke's and Mount Sinai West, NY; **Email:** rostern@chpnet.org

Additional Author (s):
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Purpose: Recent literature suggests the risk of multidrug-resistant organism (MDRO) infections in community onset pneumonia is largely overestimated leading to unnecessary use of extended-spectrum antibiotics associated with negative collateral effects including increased length of stay, drug toxicity, and resistance. This information has contributed to the removal of healthcare-associated pneumonia (HCAP) from the most recent Infectious Diseases Society of America guidelines; however, outdated literature is still influencing current practices. The aim of this study is to evaluate select outcomes associated with the implementation of revised risk stratification strategies to predict MDROs in patients with community onset pneumonia at an academic medical center.

Methods: Restricted antibiotics are requested for approval and reviewed by the infectious diseases clinical pharmacist and pharmacy resident under supervision. Subsequently, requests are accepted or denied utilizing current literature outlining the risk of resistance in community onset pneumonia. Data will be comprised of antibiotic requests for gram negative MDRO coverage in admitted cases of pneumonia. These requests will make up one arm of the study and will be compared to an equal number of randomly selected patients that were treated for suspicion of MDRO community onset pneumonia from January 2016 to June 2016, prior to the implementation of the aforementioned processes. Patients will be eligible for inclusion if they are aged 18 years and older and were admitted for a primary diagnosis of pneumonia. Patients will be excluded if they have an active thoracic malignancy or cystic fibrosis. The primary outcome will evaluate the difference in anti-pseudomonal days of therapy between the two groups. Secondary outcomes will include length of stay indices and costs of drug therapy. Descriptive statistics and regression analysis, as appropriate, will be applied to interpret results and the study will be submitted to the Institutional Review Board for approval.

Results: in progress

Conclusion: in progress

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-281

Poster Title: Evaluation of apixaban dose reductions deviating from standard criteria

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Additional Author (s):
Amy Wang

Purpose: Apixaban is a commonly used direct oral anticoagulant for nonvalvular atrial fibrillation (NVAF) to prevent thromboembolic events. In a recent study re-evaluating the data from the ARISTOTLE trial, patients who received apixaban 5mg twice daily, and met only one criterion for dose reduction were at increased risks for bleeding and thromboembolic events. Prescribers may reduce the dose deviating from label's recommendations to decrease risks of bleeding. We will investigate whether this method of dose adjustment may lead to increased risks of bleeding or thromboembolic events, and identify patient factors associated with these dose reductions.

Methods: We will perform a retrospective study of adult patients at least 18 years of age or older using either apixaban 2.5 mg or 5 mg twice daily for stroke and systemic embolism prevention in NVAF using the Prism electronic medical record system. We will review the appropriateness of the doses based on the label's recommended criteria for dose reduction (two or more of the following: serum creatinine ≥1.5 mg/dL, ≥80 years old, or ≤60 kg), and compare endpoints such as bleeding and thromboembolic risk between the improperly dosed and properly dosed groups. Additionally, we will evaluate any factors that prescribers are using when choosing the reduced dose deviating from the label's criteria. Such factors for dose adjustment may include elderly age, low weight, low hemoglobin, low platelets, altered mental status, very high serum creatinine, concomitant antiplatelet therapy, comorbidities, or compliance. Prior to the start of the study, an application will be submitted to the Institutional Review Board for approval. After the data collection, descriptive statistics will be used to assess the data. Upon review of the results, we will work to educate our medical teams and assess the impact of deviation from standard recommendations.

Results: Still pending.

Conclusion: Still pending.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-282

Poster Title: Analysis of opportunistic infection (OI) medication management of HIV/AIDS-infected patients at an academic teaching hospital

Primary Author: Daniella Badal, Mount Sinai St. Luke's and Mount Sinai West, NY; **Email:** dbadal@chpnet.org

Additional Author (s):
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Purpose: Although the use of highly effective antiretroviral medications has increased within the HIV/AIDS infected population, the proportion of patients with a risk factor for, history of, or active opportunistic infection remains a concern. Opportunistic infections pose a direct impact upon hospital costs, mortality, as well as the overall treatment success of the HIV/AIDS patient. The aim of this analysis is to evaluate whether medications used for OI prophylaxis or treatment are appropriately initiated and dosed correctly throughout inpatient management for patients diagnosed with HIV/AIDS.

Methods: This is a retrospective analysis where the electronic medical record will be used to identify patients with a diagnosis of either HIV or AIDS from January 1, 2015 to July 31, 2016. Patients will be included in the analysis if they have a reported CD4 count of less than or equal to 250 cells per milliliter. Patients will be excluded if they are less than 18 years of age, pregnant or receiving immunosuppressive therapy. The primary outcome will assess appropriateness for OI medication order entry, based on patient weight, CD4 count, organ impairment and allergies. The secondary outcomes include compliance with the AIDSinfo Guidelines for OI prophylaxis and treatment initiation, length of stay and incidence of medication errors or adverse events related to OI medications. Patient demographics, laboratory values and genotypic results will be collected. Descriptive statistical methods will be used to calculate results. The study will be submitted to the Institutional Review Board for approval.

Results: In progress

Conclusion: In progress

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-283

Poster Title: Intravenous bolus versus continuous infusion of loop diuretics in patients with acute decompensated heart failure (ADHF): A retrospective analysis

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Additional Author (s):
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Purpose: Acute decompensated heart failure has a high risk for recurrent hospitalization, as well as a high 1-year mortality rate of approximately 30%. Patients commonly present with signs and symptoms of fluid overload including dyspnea, fatigue and/or peripheral edema. According to the current American Heart Association (AHA) heart failure guidelines, intravenous loop diuretics are recommended for symptomatic relief. There is limited literature comparing different diuretic strategies for the management of patients with ADHF. The objective of this study is to compare intravenous bolus and continuous infusion of loop diuretics in ADHF patients.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. Inpatient data will be collected for a prespecified time period and divided into two groups: patients who received intravenous bolus loop diuretics and patients who received continuous infusion of loop diuretics. Adult patients diagnosed with ADHF with a left ventricular ejection fraction of 40% or less who were admitted to a unit with hourly urine output monitoring will be evaluated for inclusion to the study. Primary efficacy endpoints include duration of intravenous diuretic use, urinary output change, and average weight loss. Secondary endpoints include length of hospitalization, re-hospitalization within 30 days for heart failure, and heart failure symptoms resolution. Safety endpoints include decline in renal function, electrolyte imbalance, hyperuricemia, hypotensive episodes, and ototoxicity.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 11-284

Poster Title: Computerized Dose Range Checking Initiative: Preventing prescribing errors

Primary Author: Brian Park, New York Methodist Hospital, NY; **Email:** brp9056@nyp.org

Additional Author (s):
May Jabra
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Purpose: Prescribing errors are the most frequently occurring subtype of medication errors. According to the PROTECT study, 7.5 percent of prescribed orders were associated with errors, and the errors affected more than one third of the patients. Studies have shown that the implementation of a computerized provider order entry (CPOE) system significantly reduces medication errors. Dose Range Checking (DRC) is a clinical support system that alerts the ordering prescriber of medication dosages that are outside of the recommended ranges. We hypothesize that the utilization of CPOE with DRC will reduce inpatient prescribing errors in an acute care teaching hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. The DRC system was designed based on dose ranges from published drug references, and was customized based on the standard of practice at New York Methodist Hospital. Data used to design the dose range system includes single and daily dose ranges based on age, weight, and route of administration. The DRC system was implemented on a drug by drug basis. Initial prescribing orders with dosages outside of the set range generated silent alerts. Silent alerts were not shown to the prescriber but were documented to be reviewed by the pharmacy staff on a daily basis. After the completion of DRC design and testing, the providers will be prompted with a popup alert at the point of entry and will be required to cancel the order, ignore the alert with explanation or modify the order to continue. The pharmacists will be notified with the same alert upon order verification. Pre-implementation data was collected from past occurrence reports. The primary endpoint of this study is the number of alerts generated from prescribing errors post-implementation of DRC. The secondary endpoints are the types, severity and frequency of the prescribing errors.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 11-285

Poster Title: Development and implementation of titrate orders at an acute-care hospital

Primary Author: David Li, New York Methodist Hospital, NY; **Email:** dhl9005@nyp.org

Additional Author (s):
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Purpose: Up to 25% of audited hospitals in 2014 were cited under Joint Commission Medication Management Standard 04.01.01. This standard mandates that medication orders be documented clearly, accurately, completely, and that they comply with established hospital policies. Titratable orders are one area that many institutions struggle with as these orders must have specific parameters defined. These include: initial and maximum rates, frequency of rate changes, indication, and goal. The purpose of this study is to evaluate the implementation of a process change in a critical care teaching hospital and describe lessons learned as well as ease of adoption by hospital staff.

Methods: This is a post-implementation study that will be conducted at New York Methodist Hospital and will be submitted to the institutional review board for approval. Prior to implementation free-text fields were utilized to document titration parameters, which had the potential to be incomplete. A new workflow was adopted which included the addition of mandatory parameters to all medications intended to be titrated. Updated order sentences were created that included separate fields for all the parameters. These order sentences were then grouped and placed in order sets for ease of ordering. The final design included automatic rate calculations based off of the initial dose, simplified ordering, and standardized concentrations. Data collection will consist of real time order review, the correction of incomplete orders, and adjustments to the CPOE system to prevent future deviations. The endpoints being evaluated include adherence to ordering policy and capture of ordering methods that fall outside of established workflow. Data will be analyzed to derive best-practices for future implementations of similar workflow optimizations.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-286

Poster Title: Evaluation of continuous infusion midazolam, propofol, and ketamine in refractory status epilepticus in the intensive care unit

Primary Author: Waqas Arif, NEW YORK METHODIST HOSPITAL, NY; **Email:** waqas0120@gmail.com

Additional Author (s):
Spencer Lee
Teena Abraham
Joseph Samide

Purpose: Current American Epilepsy Society guidelines recommend adding a second antiepileptic drug (AED) or initiating a continuous infusion AED (cIV-AED) such as midazolam, propofol or pentobarbital for refractory status epilepticus (RSE). There is, however, insufficient evidence to preferentially support the use of one continuous agent over another. Additionally, there is emerging case report and small series data that suggest ketamine may be an effective agent for RSE. The objective of this study is to retrospectively evaluate the comparative efficacy, safety, and tolerability outcomes of continuous infusion midazolam, propofol, and ketamine in RSE.

Methods: A retrospective study utilizing the electronic medical record will be conducted on adult patients admitted to the intensive care unit (ICU) for status epilepticus (SE). Patients of at least 18 years of age who were treated with continuous infusion midazolam, propofol, or ketamine for RSE as determined by electroencephalogram (EEG) will be included. Patients who were deemed not to be in SE will be excluded. Primary endpoints will include time to termination of SE, permanent seizure control, and incidence of cIV-AED-related adverse drug reactions. Secondary endpoints will include recurrence of SE, evaluation of dosage regimens utilized, incidence of serious adverse drug reactions requiring discontinuation of therapy, mortality, and ICU length of stay. Institutional Review Board approval will be obtained.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-287

Poster Title: Evaluation of neuromuscular blockade in the Intensive Care Unit (ICU) setting with a focus on adjunct therapies and monitoring

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Additional Author (s):
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Purpose: Neuromuscular blocking agents (NMBAs) are frequently used in the ICU setting for indications that include facilitation of mechanical ventilation, reduction of elevated intracranial pressure, and the attenuation of oxygen consumption. These agents are, however, associated with significant complications that impact the overall patient recovery process, including risk of generalized deconditioning and residual weakness after discontinuation of blockade. NMBAs may also result in subpar evaluation of sedative needs. The objective of this study is to determine if patients are adequately sedated prior to initiation of paralysis and if optimal monitoring with targeted train of four (TOF) is routinely performed.

Methods: This is a single-center, retrospective study that will include adult patients who have received NMBAs as a continuous infusion. Patients who received NMBAs for rapid sequence intubation in procedural areas will be excluded. Patients who attained a Richmond Agitation-Sedation Scale (RASS) score of -4 preceding paralysis will be compared to those who did not. Similarly, patients will be assessed to determine if TOF monitoring with a goal of adjusting the degree of neuromuscular blockade to achieve one or two twitches was utilized. Primary endpoints will include duration of mechanical ventilation and time to discharge from the ICU and from the hospital. Secondary endpoints will include analysis of the recovery index defined as the time required for TOF to increase to baseline, evaluation of dosing regimens of analgesic, sedative, and paralytic agents, timing of sedative administration with respect to paralysis, inappropriate use of sedative agents, and administration of neuromuscular blocking reversal. Institutional Review Board approval will be obtained.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-288

Poster Title: Evaluation of the appropriate use of coagulation factors and reversal agents for the management of oral anticoagulant reversal

Primary Author: Eunah Cheon, New York Methodist Hospital, NY; **Email:** cheonea@gmail.com

Additional Author (s):
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Purpose: Patients experiencing a major bleed or those requiring an urgent invasive procedure while taking oral anticoagulants require immediate and appropriate reversal. Current management strategies consist of a host of options including vitamin K, prothrombin complex concentrates (PCC), fresh frozen plasma (FFP), and idarucizumab. In an effort to ensure consistent evidence-based anticoagulation reversal, our institution created comprehensive reversal protocols and consolidated the dispensing of coagulation factors to a single location. This study is intended to evaluate the appropriate use after protocol implementation and the centralized dispensing of coagulation factors from pharmacy.

Methods: This retrospective, observational study will include all patients receiving coagulation factors or reversal agents at our institution from June 2016 through June 2017. The reversal protocols were implemented through the creation of comprehensive order sets which included step-by-step clinical pathways for the reversal of warfarin, dabigatran, and factor Xa inhibitors. Physicians, medical residents, pharmacists and nurses were trained to properly order, dose, verify, dispense, and administer coagulation factors and reversal agents. The primary endpoint will be compliance with our internal reversal protocols. Electronic medical records and each step of the ordering and verification process will be reviewed. Secondary endpoints will include the timeliness of dispensing and administration, international normalized ratio (INR) correction, hemostatic efficacy, time to INR correction and number of packed red blood cell transfusions received. Variables such as clinical response, prothrombin time (PT), INR, activated partial thromboplastin time (aPTT), hemoglobin, hematocrit, and other coagulation assays, if available, will be collected for evaluation. Safety endpoints will include adverse events such as thromboembolic events. Institutional Review Board approval will be obtained.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-289

Poster Title: Assessing the impact of clinical pharmacy monitoring services at a small urban teaching hospital

Primary Author: Bryan Fitzgerald, Niagara Falls Memorial Medical Center, NY; **Email:** bryan.fitzgerald@nfmmc.org

Additional Author (s):
Amy Wojciechowski

Purpose: Due to their role in medication management, pharmacists are in a unique position to improve patient outcomes and reduce medication costs through focused medication monitoring. Pharmacists practicing in the setting of small teaching hospitals may have a more measurable impact on patient outcomes by performing closer clinical monitoring, an increased number of interventions, and working more closely with other healthcare professionals. The purpose of this study is to determine the effects of increased pharmacy-led clinical monitoring programs on patient outcomes at a small urban teaching hospital.

Methods: A retrospective chart review will be performed of patients at a small urban teaching hospital before and after implementation of increased pharmacy clinical monitoring services. The intervention group will consist of patients who received levofloxacin or ciprofloxacin between March and August 2016 (after implementation) and the control group will consist of an equal number of patients who received two or more doses of levofloxacin or ciprofloxacin between March and August 2015 (before implementation).
Clinical information gathered will include whether a pharmacist makes a clinical intervention for renal dose adjustment, hospital length of stay, ICU length of stay, death, hospital readmissions, emergency room visits, duration of antibiotic therapy, and adverse reactions. Patients will be included in the study if they are aged 18 years and older and received two or more doses of levofloxacin or ciprofloxacin as an inpatient during the study time periods. Exclusion criteria are pregnancy, mental disability, or treatment on a mental health unit, emergency department, or labor/delivery unit. The primary outcome will be a comparison of the number of clinical interventions made in the intervention group with enhanced pharmacist monitoring compared to the control group. Secondary measures include clinical outcomes such as length of stay and readmissions, as well as the economic impact of increased pharmacist medication monitoring.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-290

Poster Title: Assessing the clinical and economic impact of resident-run pharmacy services in a primary care clinic

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Purpose: The role of a pharmacist is expanding into different areas of patient care, beyond the traditional role of dispensing medications. One of these evolving roles is as a collaborative member of a health care team in a primary care clinic. A model of health care called the Patient Centered Medical Home (PCMH), is one where care for a patient is team-based. The objective of this study is to evaluate the clinical and economic impact that the resident-run services of a clinical pharmacist have in a primary care clinic that utilizes the PCMH model of care.

Methods: This study has been approved by the Institutional Review Board. This study was designed to evaluate the recommendations made by the pharmacist to physicians at our primary care clinic between October 1, 2016 and March 31, 2017. Patients with 8 medications or more, or at the request of the physician are included. The workup includes an evaluation of current medications, assessment of available laboratory information, and conduction of patient interviews. Based on the information collected, the pharmacist makes clinical interventions with the physician. These recommendations will be categorized and correlated to an economic impact. Categories and values are extrapolated from a study conducted by the VA that placed dollar amounts on pharmacist interventions. The pharmacist will also be collecting data on the type of counseling provided to patients and questions they have been asked by providers that are not a direct recommendation from the pharmacist. The counseling data will be categorized by disease state to assess the most common counseling points and the questions will be categorized in a similar manner as the recommendations. The primary outcome of this study will be the percentage of pharmacist-initiated recommendations that were accepted by physicians in the primary care clinic. Secondary outcomes will include the number and types of

counseling performed with patients, number and type of physician-initiated questions answered, and an economic analysis of pharmacist-initiated recommendations.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-291

Poster Title: Effects of gender and age on adverse drug reactions with ticagrelor and aspirin dual antiplatelet therapy

Primary Author: Julia Galea, North Shore University Hospital, NY; **Email:** jgalea1@northwell.edu

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Purpose: Ticagrelor is an antiplatelet medication that is used in combination with aspirin for the treatment of acute coronary syndromes (ACS). Studies have shown that systemic exposure to ticagrelor was higher in both women and elderly patients compared to men and younger patients. No dose adjustments for ticagrelor are currently recommended based on gender or age. The purpose of this study is to determine if the incidence of adverse effects consisting of bleeding and dyspnea with ticagrelor and aspirin dual antiplatelet therapy (DAPT) is higher in women and elderly patients greater than 65 years of age.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who are receiving ticagrelor and aspirin dual antiplatelet therapy. The following data will then be collected: patient age, gender, admission diagnosis, reason for dual antiplatelet therapy, ticagrelor and aspirin dose plus start date of therapy, blood pressure, heart rate, platelets, hemoglobin, serum creatinine, documented adverse drug reactions and 30 day readmission rates based on diagnosis terms for adverse drug events consisting of bleeding or dyspnea. If available, prior antiplatelet use, dose and reason for switch, as well as anticoagulation use, dose and any labs pertaining to anticoagulation use will also be collected. Consent to follow-up 30 days after treatment will be obtained from the patient or caregiver while the patient is still in the hospital. Follow-up with patients about the incidence of adverse drug effects not warranting readmission or resulting in readmission at a different health system will be obtained by calling the patient with a predetermined script to determine if any adverse drug events occurred. Patient medication adherence will also be assessed during follow-up.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-292

Poster Title: Exploratory analysis of potential prognostic factors for achieving sustained virologic response versus virologic failure in chronic hepatitis C infected patients treated with direct-acting antivirals

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Purpose: The recent advent of direct-acting antiviral (DAA) medications for chronic hepatitis C infection has revolutionized the treatment of this disease. Regimens depend on viral genotype, liver fibrosis score, and treatment history. In clinical trials, 97 percent of all patients achieved sustained virologic response, but up to 12 percent still experienced treatment failure in individual trials. The purpose of this study is to analyze a real-world population of patients who completed treatment with a DAA regimen within a large health system to determine whether certain patient and viral characteristics may serve as potential prognostic factors for treatment success versus failure.

Methods: This chart review study will be submitted to the Institutional Review Board for approval. Electronic medical records will be used to identify and collect information about patients who completed chronic hepatitis C treatment with a direct-acting antiviral (DAA) regimen. In the first part of the study, we will assess the baseline characteristics of patients who experienced virologic failure. Information collected will include the treatment regimen; treatment length; patient age, race, ethnicity, and sex; viral genotype; baseline viral RNA, platelets, and alanine aminotransferase level; IL28B genotype; presence of resistance variants; liver fibrosis score; presence of extrahepatic manifestations; and concomitant proton pump inhibitor use. Next, we will perform a case control study, with the patients who failed a DAA regimen as the cases and a matched group of controls who achieved sustained virologic response (SVR). Cases and controls will be matched with regard to viral genotype, treatment regimen, history of treatment experience, and liver fibrosis score. Odds ratios will be calculated for each baseline characteristic compared. Finally, we will assess all of the patients who

achieved SVR on a DAA regimen to determine whether certain baseline characteristics are statistically more prominent in these patients and may serve as prognostic factors for treatment success.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-293

Poster Title: Assessing the clinical impact of pharmacist intervention on glycemic control during inpatient hospital stay

Primary Author: Tasnima Nabi, North Shore University Hospital, NY; **Email:** tnabi@northwell.edu

Additional Author (s):
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Purpose: At our 825-bed hospital, approximately 300 patients have type I or type II diabetes and require inpatient glycemic control. The Joint Commission and Centers for Medicare and Medicaid Services (CMS) follow American Diabetes Association (ADA) guidelines for inpatient diabetes management. The ADA recommends a basal-bolus regimen for most patients with good nutritional intake, and discourages exclusive use of correctional insulin. The objective of this study is to evaluate whether pharmacist intervention can help improve glycemic control in patients with persistent hyperglycemia who are receiving correctional scale insulin only.

Methods: This study will be submitted to the Institutional Review Board for approval. The investigators will use the electronic medical record system to identify patients with point-of-care blood glucose levels greater than 200 mg/dL, who are managed on correctional scale insulin only. Taking into account patient-specific factors, such as age and weight, and various factors that can contribute to hyperglycemia, such as concurrent corticosteroid use and nutritional intake, the pharmacist will recommend a basal insulin regimen best suited for the patient. If the recommendation is accepted, the pharmacist will continue to monitor the patient's point-of-care glucose levels and recommend adjustments as needed. If the recommendation is not accepted, or if the patient is deemed not appropriate for basal insulin at the time of evaluation, the pharmacist will continue to monitor and intervene as needed. The primary efficacy endpoint will be the number of days since pharmacist intervention to achieve a fasting point-of-care glucose of less than 200 mg/dL for two consecutive days. The secondary efficacy endpoint will be the percentage of patients initiated on basal insulin. The primary safety endpoint will be the number of hypoglycemic events, defined as point-of-care blood glucose levels less than 70 mg/dL.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-294

Poster Title: Evaluation of warfarin nomogram provider adherence and subsequent achievement of target INR values following pharmacy intervention at a quaternary care teaching hospital

Primary Author: Erika Da Costa, North Shore University Hospital, NY; **Email:** erika.m.dacosta@gmail.com

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Purpose: Previous studies have demonstrated that the initiation of warfarin therapy based on the use of a nomogram, compared to standard decision making and care, is superior in both patient outcomes, in terms of obtaining desired therapeutic INR levels, and patient safety. The purpose of this study is to assess how well providers adhere to the warfarin nomogram already in place at North Shore University Hospital, and if pharmacy intervention plays an impact on improving adherence to this nomogram in providers who are not utilizing the warfarin nomogram in an appropriate manner.

Methods: This prospective cohort study will be submitted for approval to the Institutional Review Board and will focus on patients who are initiated on warfarin therapy in the inpatient setting, as well as patients who were initiated on warfarin during a previous hospitalization during a pre-determined time frame (collected retrospectively). Patients will be selected from a chart review based on assignment to particular medical teams to be followed and/or evaluated and will be included if they were initiated on warfarin therapy during an inpatient hospitalization during a pre-determined time frame for specified indications, including Atrial Fibrillation, Atrial Flutter, Ischemic Stroke, Thromboembolism in the form of Deep Vein Thrombosis (DVT) or Pulmonary Embolism (PE), etc. Patients who were previously on warfarin therapy prior to admission to North Shore University Hospital and patients who are initiated on warfarin therapy for any indication other than those listed in the inclusion criteria will be excluded from the study. Following evaluation, pharmacy intervention will occur in cases where

the nomogram was not appropriately followed. The primary efficacy objective of this study is to assess the adherence patterns of providers to the warfarin nomogram for patients who are initiated on warfarin therapy in the inpatient setting. The secondary efficacy objective is to evaluate the frequency at which target INRs are achieved.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-295

Poster Title: Retrospective evaluation of a medication regimen complexity index (MRCI) score to identify a correlation with adherence of antiretroviral therapy and virological success in HIV-infected patients

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Purpose: The purpose of this study is to determine if a correlation exists between a patient's medication regimen complexity index (MRCI) score and subsequent adherence to antiretroviral therapy (ART) and virological success at the Center for AIDS Research and Treatment (CART) at Northwell Health's Division of Infectious Diseases.

Methods: This research project is a retrospective chart review and is pending IRB approval. Inclusion criteria include patients who: are at least 18 years of age, were treated at CART between June 2014 and January 2016, have a confirmed diagnosis of HIV, and are currently on ART for the treatment of HIV plus or minus medications for the treatment of other co-morbid illnesses. Exclusion criteria include patients who: were not taking ART for at least one year at the start of the study period, and did not receive ART from Northwell Health's affiliated outpatient pharmacy (VIVO Health). The following data will also be collected: patient demographics (age, gender, ethnicity), patient medical history (length of HIV diagnosis, co-morbid illnesses, medication history, history of substance use, history of mental illness, HIV resistance at start of/during study period, lost to follow-up), measures of adherence (timely refills documented by VIVO, pill trays, HIV-1 RNA, self-reported adherence via chart note), and other data points (change in ART or other medications during study period). All data will be recorded without patient identifiers and maintained confidentially. MRCI scores will be calculated and reviewed to determine correlation with medication adherence and virological success.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-296

Poster Title: Local intra-articular anesthetic injection vs. Ropivacaine Nerve Block for total knee replacement at Northwell Health - Huntington Hospital

Primary Author: Gabrielle Plaia, Northwell Health Huntington Hospital, NY; **Email:** gplaia1@northwell.edu

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Purpose: Total knee replacement (TKR) involves a prolonged length of stay (LOS), increased pain burden necessitating use of opioids, consequently predisposing patients to opioid-related side effects. Various local intra-articular anesthetic (LIA) compounds demonstrated a reduction in pain, less opioid use, improved ambulation and a reduction in LOS. The purpose of this study is to examine the effectiveness of LIA compared to ropivacaine nerve (RNB) block in TKR.

Methods: This IRB approved retrospective study analyzed patients who have received RNB (Control group) between February – May 2016 vs patients who had received LIA (Intervention group) between August – October 2016. A multidisciplinary team consisting of pharmacy, orthopedic surgeons, and physical therapy created an order set approved by the Pharmacy and Therapeutics committee in July 2016 for LIA in TKR to standardize the medication content. LIA consists of ropivacaine 246 mg, epinephrine 0.5 mg, ketorolac 30 mg and clonidine 0.08 mg. The primary outcome was percent of patients discharged home. Secondary outcomes included LOS, distance walked post-surgery, opioid use and side effects of opioids post-surgery. Logistic regression will be used to model discharged home (vs. rehab) as a function of pain management group (LIA vs. RNB), while adjusting for potential confounders, such as, surgeon, OR time, age and BMI. Cox proportional hazards regression will be used to model LOS as a function of pain management, while adjusting for potential confounders. The log of the time from post-surgery to discharge will be used as an offset to adjust for varying observation times.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-297

Poster Title: Assessing effectiveness of intravenous and intramuscular hydromorphone at a community hospital

Primary Author: Emmanuel Knight, Nyack Hospital, NY; **Email:** knighte@nyackhospital.org

Additional Author (s):

Purpose: Acute care for patients admitted to community hospitals often requires pain management. Prescribers within our community hospital routinely order various opioids to be given intramuscularly. There is evidence showing intravenous administration has a more rapid and extensive initial effect compared with the intramuscular route. Our institution has recently implemented a pilot policy for pharmacists to automatically switch prescriber orders for select opioids (including hydromorphone) from intramuscular to intravenous push route. To evaluate if this policy has an effect on patient pain outcomes, we will perform a medication use evaluation on intravenous hydromorphone and compare it to intramuscular hydromorphone.

Methods: The automatic switch pilot policy for hydromorphone went into effect on August 8, 2016 on an inpatient floor at Nyack Hospital. This retrospective chart review of patients admitted from July 8, 2016 through September 30, 2016 will include patients that received at least one dose of intravenous push or intramuscular hydromorphone. Group one will include patients who received intramuscular hydromorphone before the policy went into effect. Group two will include patients who received intravenous hydromorphone after the policy change. Twenty patients will be randomly selected for each group. The following data will be collected: hydromorphone dose, time of administration, pain score prior to and after administration, time of pain assessment, and type of pain being treated (acute versus chronic). The primary measure to be evaluated is average pain score reduction after administration of hydromorphone.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-298

Poster Title: Evaluation of the effectiveness and safety of the antibiotic desensitization protocols at a large academic medical center

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Purpose: Drug hypersensitivity reactions are immunologic responses to medications. For patients with IgE-mediated hypersensitivity reactions, the process of desensitization may be applied to induce drug tolerance. The antimicrobial desensitization protocols at our institution are performed using the novel approach of administering doses as a continuous infusion. This evaluation aims to assess the effectiveness and safety of the Department of Pharmacy-developed antimicrobial desensitization protocols at our institution, present this data to our Pharmacy and Therapeutics Committee for institution-wide approval, to create electronic order sets for each medication, and to continue to collect data for future research.

Methods: A retrospective chart review will be conducted of patients 17 years of age or older admitted to our institution who attempted antimicrobial desensitization utilizing our protocols from March 2013 through July 2016. An approval from the Institutional Review Board is not required for this study due to its nature as a quality assurance and safety investigation. Patients will be identified from our electronic medical records and evaluated for inclusion. Our desensitization protocols include the following antimicrobials: amikacin, ampicillin, ampicillin/sulbactam, cefepime, ceftaroline, ceftazidime, ceftolozane/tazobactam, ceftriaxone, cefuroxime, ertapenem, levofloxacin, meropenem, nafcillin, oxacillin, pencillin, and pipercillin/tazobactam. Specific instructions regarding reconstitution, infusion, monitoring, reactions, target dosing, and storage are included within each protocol. If a reaction is identified, instructions to address the reaction and modify the protocol are available rather than immediately terminating desensitization. The following data will be collected: patient demographics, past medical history, allergies, infectious disease indication, identified pathogen,

desensitization protocol, target dosing, concomitant medications, premedication, any reactions, time to target dose initiation, and dates of admission and discharge from the hospital and intensive care unit. The primary outcome measure will be the effectiveness of our desensitization protocols, defined as successful completion with or without reactions. Secondary outcomes include safety represented by incidence of reactions, duration in the intensive care unit, and length of in-hospital stay.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-299

Poster Title: Medication use evaluation of continuous ketamine infusions for non-anesthesia indications at a large academic medical center

Primary Author: Serena Arnouk, NYU Langone Medical Center, NY; **Email:** serena.arnouk@gmail.com

Additional Author (s):
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Purpose: Ketamine acts as a potent N-methyl-D-aspartate (NMDA) receptor antagonist, which has historical use in general anesthesia. More recently, the clinical applications of ketamine have expanded to include the treatment of nociceptive and neuropathic pain syndromes, refractory status epilepticus, status asthmaticus, and depression. Our institution implemented a protocol for the use of ketamine in pain management to ensure appropriate prescribing and close clinical monitoring. The objectives of this medication use evaluation are to describe the use of ketamine infusions at our institution, determine safety and tolerability, and explore effectiveness in reducing opioid requirements and pain scores when used for analgesia.

Methods: This is a retrospective review of all patients who received a continuous ketamine infusion for a non-anesthesia indication between June 1, 2014 and June 30, 2016. Patients were excluded if ketamine was administered only as a bolus or infused only during an intraoperative period. The following patient-specific data will be collected: age, gender, race, body mass index, past medical history, medications taken prior to admission, indication for ketamine, medications tried prior to ketamine, ordering service, infusion rates and titration strategies, duration of infusion, adverse medication events, reasons for therapy discontinuation, pharmacy interventions, and frequency of nurse monitoring. For patients receiving ketamine for analgesia, the following additional data will be collected: documented history of opioid tolerance or intolerance, protocol compliance, co-administered analgesics and muscle relaxants, and opioid requirements and pain scores before and during the ketamine infusion. The primary objective being evaluated is compliance with the institutional protocol. Deviations from the protocol will be identified and characterized. Secondary endpoints include

effectiveness of ketamine for analgesia, defined by reduction in opioid requirements and pain scores, as well as overall safety and tolerability. Data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-300

Poster Title: Medication use evaluation of carfilzomib at doses greater than 27 mg per square meter at a large academic medical center

Primary Author: Gee Youn Kim, NYU Langone Medical Center, NY; **Email:** geenykim@gmail.com

Additional Author (s):
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Purpose: Carfilzomib is a second-generation proteasome inhibitor that irreversibly inhibits chymotrypsin-like activities of the proteasome, and is indicated for relapsed or refractory multiple myeloma. Currently, neither clinical studies nor manufacturer's package insert provides guidance for the optimal infusion time for doses between 27 and 56 mg per square meter. Pre-clinical pharmacokinetic data in rats suggests potential damage to cardiac myocytes with rapid bolus administration compared to intravenous infusion. The objective of this study is to assess the safety and tolerability of carfilzomib at doses greater than 27 mg per square meter.

Methods: An Institutional Review Board approval was not required because this is a medication use evaluation investigating the safety and tolerability of all patients who have received carfilzomib administrations at doses greater than 27 mg per square meter at a large academic medical center between June 1, 2014 and June 30, 2016. The following data will be collected from the electronic medical record: patient demographics, previous chemotherapy exposure, intravenous and oral concurrent chemotherapy agents, number of carfilzomib doses over 27 mg per square meter, significant cardiac co-morbidities, and relevant home medications. For each carfilzomib infusion, the following will be recorded: dose, dosing height, weight, and body surface area, infusion time, hematologic adverse events, non-hematologic adverse events, concurrent steroid dose, and concurrent chemotherapy infusions. If available, results of echocardiogram and N-terminal b-type natriuretic peptide levels before and after carfilzomib infusions will be documented. Provider documentations will be reviewed to detect any major changes to the chemotherapy regimens, rationale for the changes made, significant events between infusion appointments such as subsequent hospitalizations due to cardiotoxicity, and

overall clinical status of the patients. Nursing documentations will be reviewed to note any infusion-related adverse events. All data collected will be maintained confidentially. Categorical variables will be presented using percentage and quantitative variables will be assessed using mean with standard deviations or median with ranges.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-301

Poster Title: Evaluation of ethacrynic acid use at a large academic medical center

Primary Author: Elaine Xiang, NYU Langone Medical Center, NY; **Email:** elaine.xiang@nyumc.org

Additional Author (s):
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Purpose: Ethacrynic acid is the only intravenous diuretic that does not contain a sulfonamide moiety and is primarily prescribed for patients with a reported sulfa allergy. However, the evidence of cross reactivity between anti-bacterial sulfonamides to non-antibacterial sulfonamides, including diuretics, is not clinically justified. The cost of ethacrynic acid has increased substantially warranting a re-evaluation of all administrations and increased awareness of how to recognize patients with true sulfa allergies. The objective of this medication use evaluation is to assess the current prescribing pattern of ethacrynic acid at our institution and formulate a protocol to assist providers on its appropriate use.

Methods: A retrospective chart review of adult patients who received at least one dose of intravenous ethacrynic acid, between January 2013 to July 2016, will be conducted. An approval from the Institutional Review Board was not required for this retrospective medication use evaluation due to its nature as a quality assurance and safety investigation. Data to be collected from the medical records will include patient demographics, category/location, co-morbidities, allergy and medication history. The evaluation of intravenous ethacrynic acid includes indication, dose strength, frequency, number of doses, route, and duration of therapy. Assessment of response to therapy will include daily urine output, total intake and output over 24 hours after ethacrynic acid, and weight difference post ethacrynic acid administration. Tolerability assessment will include changes in serum creatinine, daily electrolyte imbalances, and documented ototoxicity; cost of therapy will also be evaluated. The reviewers will take these endpoints to create proposed criteria for intravenous ethacrynic acid.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-302

Poster Title: Stewardship evaluation of aztreonam use in a large academic medical center

Primary Author: Nabeela Ahmed, NYU Langone Medical Center, NY; **Email:** nabeela.ahmed@nyumc.org

Additional Author (s):
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Purpose: Aztreonam is a beta-lactam agent which lacks the bicyclic nucleus of penicillins and cephalosporins, making it a safe option in patients with IgE-mediated beta-lactam allergies. Per our hospital guidelines, aztreonam is reserved for treatment of infections caused by gram-negative pathogens and perioperative prophylaxis for patients with severe beta-lactam allergies. At our institution, aztreonam use increased from 0.2 days of therapy (DOT)/1000 patient-days in 2009 to 9.2 DOT/1000 patient-days in 2015. This may be associated with incomplete allergy interpretation and documentation in electronic medical records. To this effect, we thought to conduct a stewardship evaluation of aztreonam use.

Methods: We will conduct a retrospective study at a large academic medical center to evaluate aztreonam use. An approval from the Institutional Review Board was not required for this retrospective medication use evaluation due to its nature as a quality assurance and safety investigation. We identified 337 patients who received aztreonam between January 1, 2015 and December 31, 2015, from a pharmacy database of administered antibiotics. We randomly selected 100 unique patients (30%) for inclusion. Data collected will include patient demographics, medical service at time of order, allergy documentation, details of hospital stay, microbiological evaluation, and appropriateness of aztreonam orders. Severe beta-lactam allergies were defined by anaphylaxis, angioedema, respiratory distress and/or urticaria. Inappropriate aztreonam use will be defined by orders for patients without severe beta-lactam allergy, allergy of any severity but prior tolerance, and those without a documented beta-lactam allergy. The objective of this study is to provide baseline assessment of the appropriateness of aztreonam use at our institution and identify services where utilization requires improvement. The secondary objectives include length of stay, estimated cost saving,

and evaluation of aztreonam dosing. Based on our findings, we will develop a plan for an antimicrobial stewardship led intervention to improve aztreonam utilization.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-303

Poster Title: Clinical impact of a pharmacy resident on optimizing therapy in congestive heart failure patients to prevent re-hospitalization

Primary Author: Maryam Ahmed, Plainview Hospital, NY; **Email:** mahmed21@northwell.edu

Additional Author (s):
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Purpose: Heart disease is one of the leading causes of death in America. Congestive heart failure (CHF) specifically affects over 23 million patients worldwide, with rates of hospital readmission on the rise. The primary objective of this study is to determine if pharmacist intervention in patients admitted with a diagnosis of CHF, through optimization of medication regimens as well as counseling, will prevent re-hospitalization due to CHF exacerbations and impact mortality rates. Incorporating pharmacy interventions can provide a new model of patient–centered care that can support patients with this condition, and may lead to a decrease in hospitalizations.

Methods: This study will take place at a community hospital over a period of six months. Patients admitted to the hospital will be reviewed retrospectively between January – March 2016, and prospectively between January – March 2017. The hospital's electronic health record system will be used to identify a random sample of 50 patients age 18 years and older with a documented diagnosis of congestive heart failure. Exclusion criteria include patients less than 18 years of age, pregnant patients, and patients not admitted as inpatients. Data collected will include baseline demographics (such as age, gender, weight, congestive heart failure staging per the American Heart Association, ejection fraction), the patient's discharge medication regimen and any pharmacy resident interventions made related to the diagnosis of congestive heart failure (including patient education regarding medication adherence and self-monitoring). Data recorded over the three month period of pharmacy resident intervention will be compared to data recorded during the baseline period of no pharmacy resident involvement to determine statistical impact. The primary endpoint of this study will be re-hospitalization due to heart failure. Secondary endpoints will include length of stay and mortality rate.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-304

Poster Title: Impact of a pharmacy resident on reducing the incidence of Clostridium difficile infections at a community teaching hospital

Primary Author: Anthony Juliano, Plainview Hospital, NY; **Email:** ajuliano2@northwell.edu

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Purpose: Healthcare-associated infections (HAI) are a major ongoing concern for hospitals across the country. Infection with Clostridium difficile (C. difficile) is a type of HAI that affects almost 500,000 patients in the United States annually leading to increased mortality and financial burden. Risk factors for acquiring C. difficile infection include advanced age, duration of hospitalization, chemotherapy, gastrointestinal surgery, enteral feeding, acid suppressing agents and exposure to antimicrobial agents. Longer duration of antimicrobial therapy along with multiple antimicrobial agents increases this risk. The primary objective of this study is to help reduce incidence of C.difficile infections at a community hospital.

Methods: This study will be conducted at a community hospital over a period of six months. Patients admitted to the hospital will be reviewed retrospectively between October – December 2016. A prospective review will be performed between January – March 2017. The hospital's electronic health record system will be used to identify admitted patients 18 years of age or greater receiving doses of a pre-defined list of antibiotics known to contribute to C.difficile infections. Exclusion criteria for this study include patients with active cancer, immunosuppressed patients, or pregnancy. The pharmacy resident will evaluate selected medications associated with C.difficile incidence and identify opportunities for intervention, specifically de-escalation or discontinuation of therapy. The pharmacy resident will also help identify instances where diarrhea may be due to confounding circumstances (e.g. laxative use) and assist in questioning and discontinuing unnecessary C.difficile laboratory orders. Data collection will include patient demographics (eg. age, gender, weight, creatinine clearance), antimicrobial medication orders, presence of cultures and susceptibility results, total duration of antibiotic therapy, C. difficile laboratory testing, proton pump inhibitor usage, laxative usage, duration of hospital stay and cost of antibiotic therapy. Data collected during the baseline time

period without resident interventions will be compared to data collected during the three month period with resident interventions. The primary outcome is development of C.difficile infection. Secondary outcomes include length of stay, and cost.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-305

Poster Title: Clinical impact of pharmacy resident intervention on antimicrobial stewardship at a community teaching hospital

Primary Author: Kimberly Pough, Plainview Hospital, NY; **Email:** kpough@northwell.edu

Additional Author (s):
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Purpose: Antimicrobial resistance has increased significantly over the years because of inappropriate use of antimicrobial agents. Studies suggest that microorganisms have been developing new mechanisms of resistance over time, which impedes the ability to treat and control common infections. Antimicrobial stewardship programs are being established in clinical practice settings in order to minimize the consequences of inappropriate antimicrobial use, such as increased resistance, morbidity and mortality from toxicity and secondary infections, and increased healthcare costs. The primary objective of this study is to determine if antimicrobial stewardship interventions initiated by a pharmacy resident will lead to improvements in these areas.

Methods: This chart review will be conducted at a community hospital over a period of six months. Patients admitted to the hospital will be reviewed retrospectively from October – December 2016, and prospectively from January – March 2017. The hospital's electronic health record system will be used to identify a random sample of admitted patients who are ≥18 years of age and have received antibiotics deemed inappropriate for at least three days. Exclusion criteria include patients < 18 years of age, patients not admitted as an inpatient, patients on antibiotics for less than three days, pregnancy, and presence of active cancer and/or immunosuppressive disorders. Data collection will include patient baseline demographics (e.g., age, gender, weight, serum creatinine), selected antimicrobial agent, route of administration, presence of cultures and susceptibility results for the infection, clinical markers of infection (e.g., fever, elevated lactate), total duration of antibiotic therapy, development of secondary infections, duration of hospital stay, and cost of antibiotic therapy. Data collected pre- and post- pharmacy resident intervention will be compared to assess appropriateness with the intent of improving patient outcomes. Appropriateness will be evaluated based on

recommended durations provided in treatment guidelines for infections and signs of clinical improvement in patients. The primary outcome measured will be the total duration of antibiotic therapy. Secondary outcomes will include the development of opportunistic infections, length of hospital stay, and cost.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-306

Poster Title: Nitrofurantoin utilization review in the elderly at a community teaching hospital

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Purpose: Nitrofurantoin is a widely used antibiotic for the treatment of urinary tract infections (UTI). The current package insert indicates that the use of nitrofurantoin is contraindicated in patients with an estimated creatinine clearance (eCrCL) of less than 60mL/min, however The Beers' Criteria for Potentially Inappropriate Medication Use in Older Adults recommends that it may be used in patients ≥ 65 years of age with eCrCL ≥ 30mL/min. This medication utilization evaluation is a quality improvement project designed to assess and evaluate the current prescribing practices of nitrofurantoin in elderly patients.

Methods: A retrospective chart review was conducted in patients ≥ 65 years of age who received nitrofurantoin for the treatment or suppression of UTIs between June 2015 and June 2016. The following data was collected for each patient: gender, age, total body weight, eCrCl, serum creatinine (SCr), nitrofurantoin dose and frequency, indication, symptoms consistent with a UTI, drug allergies, presence of a urinary catheter, urinalysis and urine culture, treatment duration, and prescriber. The Cockcroft-Gault equation was used to calculate an eCrCL. A modified eCrCL was determined for patients with actual SCr < 0.8 mg/dL for comparison.
The primary objective was to describe the prescribing patterns of nitrofurantoin in the elderly at our institution and compare them to the standards of care, as defined by the Infectious Disease Society of America's uncomplicated UTI guidelines, the Beer's Criteria, and the package insert for nitrofurantoin. Secondary objectives include adverse drug events, treatment rates of asymptomatic bacteriuria, and discrepancies between the utilization of nitrofurantoin between both methods of eCrCL.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-307

Poster Title: Management of QTc prolongation at a large community, teaching hospital

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Purpose: Prolongation of the QT interval has been linked with a high risk of adverse cardiovascular outcomes, including arrhythmias like Torsades de Pointes. A prolonged QTc has generally been defined as a value above 450 mesc, but QTc intervals greater than 500 msec have the highest association with arrhythmias. Common risk factors for QTc prolongation in hospitalized patients included advanced age, structural heart disease, electrolyte disturbances, and certain medication. Since, there are no standardized guidelines for the management of QTc prolongation in hospitalized patients, the objective of this evaluation is to capture practice management of QTc prolongation at Rochester General Hospital.

Methods: This retrospective study has been approved by Institutional Review Board at Rochester General Hospital. Randomly selected adult patients with a QTc greater than 480 msec admitted between August 2015 to August 2016 will be included. Patients with a pacemaker or automatic implantable cardioverter defibrillator, history of congenital QT prolongation, being started on dofetilide during the admission, and with an electrocardiogram showing an active arrhythmia will be excluded. Patients will be identified via a report generated from the electronic medical record system and then manually screened for inclusion. The following data will be collected: age; gender; weight; BMI; ethnicity; creatinine clearance; past medical history; primary reason for admission; length of stay; drug name; dose; and route for medications administered with 72 hours of the prolonged QTc; electrolyte concentration, vital signs, and electrocardiogram information; and management of QTc prolongation. All data will be recorded without patient identifiers and maintained confidentially. The primary outcome will be the strategy used to manage the QTc prolongation. Management strategies will include medication modification, correction of electrolyte disturbance, monitoring, other, or none. Secondary outcomes will be the percentage of patients deemed to have received clinically appropriate management of QTc prolongation and the percentage of patients who developed

Torsades de Pointes. Clinically appropriate management will be determined on an individual case basis using evidence-based medicine by two licensed pharmacists working independently.

Results: n/a

Conclusion: n/a

Submission Category: Pharmacokinetics

Submission Type: Research-in-Progress

Session-Board Number: 11-308

Poster Title: Effectiveness of a pharmacy driven vancomycin pharmacokinetic dose calculation model

Primary Author: Min Young Son, Southside Hospital, NY; **Email:** smy912001@hotmail.com

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Purpose: The hospital implemented the health system approved vancomycin pharmacokinetic dose calculation model designed as an excel file, to calculate appropriate initial vancomycin dosing. The purpose of this study is to investigate the effectiveness of a pharmacy driven vancomycin dose review using the system approved vancomycin pharmacokinetic calculation model and to anticipate if the hospital can implement a complete pharmacy driven vancomycin dosing protocol in the near future.

Methods: This is a single-centered, randomized, retrospective study based on the electronic medical record of patients who received vancomycin. The control group will be randomly selected from patients who received vancomycin before the vancomycin pharmacokinetic calculator was implemented and intervention group will be randomly selected from patients who received vancomycin after the vancomycin pharmacokinetic calculator was implemented. Data collection will include: basic demographics, vancomycin dose, frequency, route, date(s) of administration, vancomycin trough level, time vancomycin trough level obtained, indication of vancomycin, serum creatinine level, and calculated creatinine clearance. Target trough level will be evaluated based on its indications. Data will be extracted and/or retrieved from the electronic medical record.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-309

Poster Title: Implementation of a multi-disciplinary approach to improve hypoglycemia protocol adherence in the inpatient setting

Primary Author: Han Zhang, Southside Hospital, NY; **Email:** hzhang2@northwell.edu

Additional Author (s):

Purpose: Hypoglycemia is prevalent yet a critical barrier to optimal glycemic control for hospitalized patients. Institutional hypoglycemia protocol provides evidence based recommendations to care providers on the timely and accurate management of hypoglycemic episodes. The objective of this retrospective cohort study is to evaluate the benefits of a pharmacy driven educational intervention targeting nursing staff to improve hypoglycemia protocol adherence rate in the inpatient setting.

Methods: This study has already been submitted to the Health System Institutional Review Board for approval. Electronic medical record and a site specific electronic clinical management dashboard system will be utilized to identify patients with at least one hypoglycemic episode defined as a glucose reading of less than 70mg/dL. The following patient specific data will be collected: age, gender, admission diagnosis, diabetes diagnosis, insulin therapy, time of hypoglycemia episode, glucose reading, and medications administered to reverse hypoglycemia. Nursing documentation will also be reviewed to determine agents administered to reverse hypoglycemia. The rate of accurate hypoglycemia protocol activation and subsequent administration of protocol indicated medications will be calculated and compared between pre-educational intervention and post -intervention period. For each hypoglycemic episode, reviewer will rate hypoglycemia treatments as adherent with protocol and protocol therapy administered, non-adherent with protocol but protocol therapy administered, non-adherent with protocol and protocol therapy not administered. All data will be recorded without patient identifiers and maintained through a confidential database system. Deviations from protocol will be evaluated and incorporated into future process improvement. In addition, patient specific characteristics associated with hypoglycemic episodes will also be analyzed, to assist in monitoring and identification of high risk population for hypoglycemia prevention in the future.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-310

Poster Title: Use of direct oral anticoagulants and bleeding incidence in HIV Patients

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Purpose: Few studies have been completed on assessing the risk of bleeding in HIV patients who have concomitant diagnoses that require anticoagulation therapy. Antiretroviral treatment regimens often have interactions with many medications of different classes. Because bleeding risk can be a major concern with the use of anticoagulation, concomitant use with antiretrovirals can exacerbate bleeding risk by inducing or inhibiting the metabolism of anticoagulants. The objective of this study is to determine whether HIV/AIDS patients on warfarin have greater bleeding risk than those on direct oral anticoagulants.

Methods: This study will be submitted to the Institutional Review Board for approval. Using International Classification of Diseases (ICD) diagnostic codes, the electronic medical record will identify HIV/AIDS patients who were admitted in the last 5 years with a major or minor bleed. This will include patients from Mount Sinai St. Luke's and Mount Sinai West hospitals who were diagnosed with atrial fibrillation, deep vein thrombosis, venous thromboembolism, pulmonary embolism, gastrointestinal bleed, subarachnoid hemorrhage, or intracranial hemorrhage. Patients will be not included in the study if they have one or more of the following: greater than 80 years old, concomitant diagnosis of end stage liver disease, pregnancy, or severe renal insufficiency (SCr > 2.5 mg/dL). Chart reviews will be completed to identify any upward trends in INR, aPTT, or bleeding adverse events during the course of their hospitalization. Upon classification of anticoagulation therapy into warfarin or direct anticoagulant categories, statistical comparisons will done to determine if HIV/AIDS patients on a direct anticoagulant such as dabigatran, apixaban, edoxaban, or rivaroxaban have a greater risk of bleeding than HIV/AIDS patients on warfarin.

Results: N/A

Conclusion: N/A

Submission Category: Leadership

Submission Type: Research-in-Progress

Session-Board Number: 11-311

Poster Title: Assessing student knowledge of substance use identification, reduction and prevention before and after the completion of Screening, Brief Intervention, and Referral to Treatment training

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Purpose: Screening, Brief Intervention, and Referral to Treatment (SBIRT) is a national initiative used to identify, reduce and prevent the problematic use, abuse and dependence of alcohol and drugs. A training project was designed for students of the pharmacy, physician assistant and public health programs at St. John's University College of Pharmacy and Health Sciences to identify and correct gaps in the existing curricula on substance abuse and addiction training. The purpose of this study is to determine the difference in student's knowledge before and after the implementation of SBIRT training.

Methods: SBIRT training was completed for the first cohort of students in the spring 2016 semester within required courses of Doctor of Pharmacy, Physician Assistant and Master of Public Health programs of the College. The training in the required courses included objectives focused on effective communication, counseling, interviewing skills, and health screenings. A pre-survey was completed online by the students before the training to assess baseline knowledge and a post-survey was completed after the training and completion of and online virtual assessment program. Data obtained from these surveys were converted into a spreadsheet to aid in the comparison of the student surveys. The results from the pre- and post-surveys will be compared to assess changes in baseline knowledge for all health professions students, and among the three disciplines. This study was reviewed and approved by the University Institutional Review Board.

Results: n/a

Conclusion: n/a

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-312

Poster Title: Impact of a pharmacist-driven insulin glargine dosing protocol on fasting blood glucose at a 451 bed community teaching hospital: a retrospective observational study

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Purpose: Subcutaneous basal/bolus insulin (BBI) is utilized for inpatient management of diabetes mellitus. The most common adverse effect is hypoglycemia, which is associated with increased morbidity and mortality. In June 2015, the hospital BBI order set was amended to include an insulin glargine (IG) dosing protocol. This revision requires pharmacists to perform a 20 percent IG dose reduction for patients with a fasting blood glucose (FBG) at risk for hypoglycemia (FBG of 70 to 100mg/dL). This study will evaluate the effectiveness of this protocol at decreasing the number of patients at risk for fasting hypoglycemia.

Methods: This retrospective chart review was approved by the Institutional Review Board. Insulin glargine patients with an active order for rapid-acting insulin between January 1st and March 31st of 2015 (pre-protocol) and 2016 (post-protocol) were identified using the electronic health record. Medical/surgical patients age greater than 17 were included if they had at least one occurrence of the inclusion event, defined as a fasting blood glucose of 70 to 100mg/dL between the hours of 0300 and 0900. Exclusion criteria consisted of patients admitted to intensive or progressive care units, receiving tube feeds or total parenteral nutrition 24 hours prior to, or 72 hours following the inclusion event, or an incident of hypoglycemia (blood glucose less than 70mg/dL) prior to the inclusion event. Patient demographics, doses of IG administered, FBG levels, and hypoglycemic events were collected. The primary outcome was success rate of the protocol, defined as a FBG greater than 100mg/dL for 3 consecutive days following the inclusion event. Secondary outcomes were rate of hypoglycemia and protocol compliance.

Results: n/a

Conclusion: n/a

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-313

Poster Title: Aminoglycoside pharmacokinetic dosing policy compliance and patient outcomes; a retrospective review at a 451 bed community teaching hospital and its affiliated surgical centers

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Purpose: Aminoglycosides (AMG) are used for multi-drug resistant gram negative infections, surgical prophylaxis and gram positive synergy. AMG are adjusted based upon weight to ensure therapeutic concentration and to limit toxicities. The hospital health center policy contains guidelines for use of total body weight (TBW), ideal body weight (IBW) or adjusted body weight (AdjBW) for AMG dosing. AMG doses per policy are pulse (5mg/kg), standard (2mg/kg), and surgical prophylaxis (1.5-5mg/kg). This study will assess compliance with policy weight based dosing of AMG and patient outcomes.

Methods: The Institutional Review Board granted exempt status to this retrospective medication use evaluation. The electronic health record (EHR) was used to identify patients (18 years or older) who received an AMG dose from January 1st through June 30th 2016. Patients were excluded if route of administration was not intravenous. The primary outcome is policy compliance with weight based dosing. Policy based dosing uses IBW unless 1.) TBW is less than IBW (TBW is used for dosing) or 2.) TBW is greater than 20% of IBW (AdjBW is used). Secondary outcomes include: time to therapeutic peak (time of first dose administered to time of therapeutic peak), hospital length of stay (LOS), rate of nephrotoxicity (50% increase in baseline creatinine) and ototoxicity (documentation in EHR). Data collection included: drug, dose, indication, type of surgical procedure, patient location, baseline renal function, and concomitant nephrotoxic medications (contrast dye, vancomycin, piperacillin-tazobactam, loop diuretics).

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-314

Poster Title: Evaluation of an adjusted body weight based vancomycin dosing guideline

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Purpose: Vancomycin has been in use for decades; however, optimal dosing strategies remain undefined. In July 2015, a vancomycin dosing guideline using adjusted body weight (AdjBW) and renal function was developed and distributed within the pharmacy department at our institution to standardize vancomycin dosing. AdjBW was chosen over actual body weight to avoid over-dosing in obese patients; this was expected to have minimal impact on dosing for non-obese patients. The objective of this study is to validate the effectiveness of the pharmacy department vancomycin dosing guideline.

Methods: This study will be a retrospective medical chart review of inpatients at St. Peter's Hospital from July 2015 through September2016. This study is approved by our institution's investigational review board. Patients will be included if they are at least 18 years of age, received at least 2 doses of vancomycin dosed according to guideline recommendations, and had a documented trough concentration within 1 hour before the next vancomycin dose. Patients will be excluded if they were pregnant, required peritoneal dialysis, received vancomycin for perioperative prophylaxis, or had acute kidney injury or a Creatinine Clearance less than or equal to 15 ml/min. The primary outcome will be attainment of therapeutic trough concentrations of 15 to 20 mcg/ml for serious infections (e.g. bacteremia, pneumonia) as outlined in the guideline. Secondary outcomes include attainment of therapeutic trough levels of 10 to 15 mcg/ml for less serious infections (e.g. cellulitis) and patient variables associated with lack of goal trough attainment (e.g. age, weight, renal function, treatment in the intensive care unit). Primary outcome findings will be descriptive. Categorical and continuous variables associated with lack of target trough attainment will be determined using Fisher's exact and Mann-Whitney U, respectively. Variables with a p value less than 0.2 on univariate analysis will

be entered into a multivariate regression model to determine patient factors independently associated with lack of target attainment.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-315

Poster Title: Hazard vulnerability analysis of medications for inpatient medical emergencies

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Purpose: A multitude of medical emergencies occur in hospitals which require medication administration. These emergencies commonly include physiologic, medication, or toxin-induced events. In 2009, an interdisciplinary team at our hospital conducted an antidote hazard vulnerability analysis in response to the Expert Consensus Guidelines for Stocking of Antidotes in Hospitals that Provide Emergency Care. While there have not been guideline updates, the hospital's stock of antidotes has likely since changed. The primary objective is to perform a hazard vulnerability analysis to assess the availability of medications used for various inpatient medical emergencies and includes an update to the antidote hazard vulnerability analysis.

Methods: This emergency medication hazard vulnerability analysis will enlist an interdisciplinary team representing multiple specialties in order to compile a list of possible inpatient medical emergencies. A value will be assigned to the probability and risk of an event in our hospital based on this team’s consensus, ranging from not likely to very likely and minimal harm to permanent damage or death, respectively. Preparedness will then be determined based on adequate supply of timely, accessible medications indicated in these medical emergencies. A hazard vulnerability score will be calculated as a composite of these three variables to determine the hospital’s medication preparedness for the most common and most severe events. To update the antidote hazard vulnerability analysis, preparedness will be assessed based on current stock and accessibility. The preparedness assessment will enlist pharmacy management, evaluate stock in the storeroom, and analyze current protocols to access understocked medications.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-316

Poster Title: Assessment of institutional fluoroquinolone use for uncomplicated infections

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Purpose: In May and July of 2016 the Food and Drug Administration issued drug safety communications warning of risk-benefit concerns with fluoroquinolones for treatment of uncomplicated infections. Infections of interest are acute bacterial exacerbations of chronic bronchitis, acute bacterial sinusitis, and uncomplicated urinary tract infections in adults. Considering fluoroquinolone usage for these infections is now discouraged due to safety concerns, the purpose of this study is to characterize fluoroquinolone prescribing for the aforementioned uncomplicated infections at our community hospital. Findings will be used to identify interventions to improve institutional prescribing practices and promote patient safety.

Methods: Fluoroquinolone usage in both the emergency department and inpatient for treatment of uncomplicated infections will be retrospectively assessed between February 2016 and August 2016. This study has been approved by our institutional review board. Patients will be included if at least 18 years of age and prescribed a fluoroquinolone (levofloxacin, ciprofloxacin, moxifloxacin, gemifloxacin) for acute bacterial sinusitis, acute bacterial exacerbation of chronic bronchitis, or uncomplicated urinary tract infections. Data to be collected include age, gender, ethnicity, co-morbidities, antibiotic allergies, baseline renal function, evidence of sepsis, cultures, admission or discharge after prescription, prescriber type, presentation from a healthcare facility or home, documented antibiotic use within 3 months, and readmission within 30 days with evidence for toxicity potentially due to fluoroquinolone use. Adequate sample size permitting, univariate and multivariate regression analyses will be conducted to determine patient characteristics associated with fluoroquinolone prescription for the infection of interest.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-317

Poster Title: Improving medication related omissions associated with medication holding

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Purpose: Risk of venous thromboembolism (VTE) in hospitalized patients may be related to missed doses of prophylactic anticoagulants. The Institute of Safe Medication Practices (ISMP) states medication hold orders are not safe unless they include specific instructions indicating when to resume. In a 450-bed community hospital, a Failure Mode and Effect Analysis (FMEA) related to anticoagulation medication events revealed risks or errors can happen, including medications held prior to procedure. Identifying specific points involved with holding anticoagulants may lead to less medication omissions and risk of hospital-related VTE.

Methods: Initially, in this Institutional Review Board approved medication use evaluation, inpatients added to the endoscopy and interventional radiology procedure list for next day procedures will be evaluated for use of anticoagulation. The process for holding or stopping anticoagulation prior to procedure and how the medication is restarted post-procedure will also be reviewed. A large sample size of physicians or physician groups will reveal the current representation of anticoagulation hold processes prior to a procedure. Data collected will include: date and type of procedure, anticoagulant prescribed, how anticoagulant was held, how and when anticoagulation was resumed, if it was resumed and prescribing physician. All data will be recorded without patient identifiers and maintained confidentially. An evaluation to compare the data of the hospital's current practices versus the existing procedure will allow for revision and implementation of best practice for medication holding pre-procedure and restarting post-procedure.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-318

Poster Title: Potential tumor flare and risk factors in patients receiving anti-PD-1 antibodies.

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Additional Author (s):
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Purpose: Nivolumab and pembrolizumab are both novel PD-1 antibodies used for a variety of cancers. Tumor flare is a false-positive increase in tumor mass on radiographic evidence due to inflammation secondary to the drug. This false positive mimics progression of cancer rather when in reality it could indicate a positive therapy response. The incidence of tumor flare was not defined by the manufactures of either medication. There is little evidence on whether some medications may reduce the risk of this false positive result which prompted further study to categorize and define the true incidence of tumor flare.

Methods: Inclusion Criteria:
• Receive study drug for at least 3 months
• Any patient who has received Nivolumab or Pembrolizumab for at least 3 months with no greater than 6 week interruption in therapy.
Exclusion Criteria:
• Patients receiving more than 1 oncologic immunotherapy
• Any treatment, radiologic evidence, laboratory parameter beyond September 14th, 2016.
• Patients with less than 3 months immunotherapy
Age Range:
• 18-99 years old
Procedures
• Retrospective Chart Review
• Stony Brook University Hospital (via Powerchart)

• Will request dispensing report for Nivolumab and Pembrolizumab to track all eligible patients at SBUMC
• Will check in patient dispensing records and physician progress notes at week 2, 4, 8, 12, and 24 weeks for use of any corticosteroid during time of radiologic scans.

Results: Research in progress

Conclusion: Research in progress

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-319

Poster Title: Comparing outcomes of re-induction after standard 7+3 chemotherapy in acute myeloid leukemia

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Purpose: Acute myeloid leukemia (AML) is the most common type of acute leukemia among the adult population. Many of these patients have refractory disease that doesn't respond adequately to induction chemotherapy. There are various regimens that can be utilized for patients with primary refractory disease requiring re-induction, however there have been minimal clinical trials performed that compare these intensive regimens. The objective of this study is to compare the outcomes of re-induction regimens to determine which regimen provides the best complete remission rates and most optimal toxicity profile for refractory AML patients treated at Stony Brook University Hospital (SBUH).

Methods: This is a retrospective medical record review that includes all adult patients 18 years of age and older diagnosed with AML, who received 7+3 induction chemotherapy (7 days of cytarabine and 3 days of an anthracycline) and then re-induction for primary refractory disease at SBUH from January 2013 to January 2016. Primary refractory disease is defined by not achieving complete remission (CR) after up to two cycles of frontline induction chemotherapy, with a remaining blast count of 5% or more. Data collection will include patient demographics, cytogenetics, date and dose of 7+3 induction received, dates and doses of re-induction regimens received, length of remission following re-induction, total length of stay, length of stay following the start of re-induction, use of granulocyte-colony stimulating factor, progression to stem cell transplant; and white blood cell count, absolute neutrophil count, and blast percentages prior to and after induction treatment and re-induction treatment. Data regarding hematologic toxicities will be collected, including duration of neutropenia and thrombocytopenia; as well as incidence of febrile neutropenia and infections following re-

induction therapy. In addition, data will be gathered to determine if CR, complete remission with incomplete recovery (CRi), or no response was achieved after re-induction therapy. All data will be recorded without patient identifiers and will be maintained confidentially. Study protocol was submitted for approval by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-320

Poster Title: Correlation between methicillin-resistant staphylococcus aureus infections and methicillin-resistant staphylococcus aureus nasal swab results for empiric antibiotic decisions in the medical intensive care unit

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Additional Author (s):
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Purpose: Antimicrobial stewardship has been shown to reduce antibiotic resistance, improve patient outcomes and cut costs. One of the more common infectious organisms, Staphylococcus aureus, has developed resistance to not only penicillin (MRSA), but also vancomycin (VRSA). Yet not all patients are at risk of infection with these resistant strains. The MRSA nasal swab is a common test done at ICU admission with results of this test correlating with MRSA infections. This project was designed to determine if negative MRSA swabs can be used to eliminate the use of empirical anti-MRSA agents in medical ICU patients when it is not needed.

Methods: This study was designed as a retrospective study at Stony Brook University Medical Center. The desired patient population was identified using ICD-9 and ICD-10 codes indicating a diagnosis of community-acquired pneumonia, bacteremia or sepsis within the first 48 hours of ICU admission. Data was obtained for patients admitted to the medical intensive care unit between January 1, 2010 and December 31, 2015 who had a MRSA nasal swab PCR and either sputum or blood culture obtained within 48 hours of admission and subsequently diagnosed with pneumonia, bacteremia or sepsis. The results will be analyzed to determine the negative predictive value of MRSA nasal swab PCR in this patient population by comparing the rates of MRSA infections with the results of the nasal swab obtained at admission to assess its utility in empiric therapy decision making in the medical intensive care unit.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-321

Poster Title: Drug use evaluation: the use of meropenem at a tertiary care institution

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Additional Author (s):
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Purpose: The urgent threat of carbapenem-resistant Enterobacteriaceae (CRE) highlights the need for stewardship of carbapenem use. The development of antibiotic resistance is multi-factorial. Nevertheless, evidence strongly supports the correlation between increased antibiotic use and resistance development. At our institution, the rate of carbapenem resistant Klebsiella pneumoniae has been approximately 10 to 15 percent; however, an increasing trend of carbapenem use over the past two years at our institution warranted an examination of carbapenem use. The purpose of this study is to evaluate the use of meropenem and identify strategies for stewardship interventions.

Methods: A retrospective chart review was performed using the electronic medical record at our institution. A data inquiry was requested to include all adult patients who received meropenem over three months. The data collection included but was not limited to: prescriber information, hospital units, empiric indications of meropenem, de-escalation based on culture results, duration of therapy, and appropriate dosing per renal function. Patient specific data collected included demographics as well as a history of multi-drug resistant gram negative organisms within six months of the index admission. Data will be evaluated to determine the appropriateness of meropenem, including dose, indication, and duration of therapy as per clinical guidelines. Opportunities for improvement in stewardship of carbapenems will be identified.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-322

Poster Title: Clinical evaluation of treatment of asymptomatic bacteriuria at an academic medical center

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Purpose: Asymptomatic bacteriuria (ASB) is a common clinical finding defined as presence of bacteria in urine without signs and symptoms suggestive of a urinary tract infection (UTI). Inappropriate use of antibiotics to treat ASB contributes to antibiotic overuse and is associated with higher rates of resistance and adverse effects. Unfortunately, rates of antimicrobial prescribing for ASB are still high despite the availability of guidelines from Infectious Diseases Society of America (IDSA). The purpose of this study is to retrospectively assess compliance to IDSA guideline recommendations on management of ASB in an academic teaching hospital in order to implement an in-hospital guideline.

Methods: This was a single-center, retrospective, observational study. A retrospective chart review was performed on patients who had a positive urine culture between January 2013 and September 2016. Hospitalized patients were included in this study if they had a positive urine culture (defined as a single urine specimen that yielded an organism in quantitative counts equal to or greater than 100,000 colony forming units per mL). Patients were excluded if they were under the age of 18, exhibited signs and symptoms of UTI, diagnosed with nephrolithiasis on admission, neutropenic (absolute neutrophil count less than 1,500 mm3), had a renal transplant, or had an urologic abnormality or intervention (defined as having benign prostate hyperplasia, urinary incontinence, prostate or bladder cancer, prostatitis, or a transurethral resection of the prostate).
Patients determined to have ASB were evaluated on whether treatment was initiated and if antibiotics prescribed were compliant to IDSA recommendations for treatment of UTI. The primary outcome was percentage of patients treated for ASB. Secondary outcomes were appropriateness of empiric antibiotic therapy in patients prescribed antibiotic treatment, total duration of antibiotic treatment, percentage of patients who had antibiotics de-escalated or

discontinued after susceptibility data became available, percentage of patients with removal of catheter, and whether Infectious Diseases consult was obtained.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-323

Poster Title: Incidence and risk factors associated with leukopenia following renal transplantation at a single center.

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Purpose: Leukopenia in the setting of renal transplantation (RT) increases the risk for infections in these recipients. Commonly used immunosuppressive medications, including rabbit antithymocyte globulin and mycophenolate mofetil, antimicrobial medications, race, and age may contribute to this development of leukopenia. A high percentage of patients at our institution are unable to tolerate their immunosuppression regimen due to leukopenia, which leads to dose adjustments or discontinuation of therapy, as well as additional hospitalizations. The objective of this study is to determine the incidence of leukopenia and identify risk factors associated with leukopenia in RT recipients at our transplantation center.

Methods: This study is a retrospective chart review of adult patients receiving a renal transplant at our center from January 2011 to March 2016. Data was collected on patient demographics, laboratory values such as white blood cell count (WBC) before and at various timepoints after transplantation, medications used for immunosuppression and treatment of leukopenia, and documented infections up to 2 years post transplantation. Percent change in WBC was calculated at different timepoints and time to each leukopenic episode and episode resolution recorded. The results of this study will be analyzed through regression analysis.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Case Report

Session-Board Number: 11-324

Poster Title: Ceftolozane/tazobactam for non-FDA approved indications caused by multi-drug resistant gram negative organisms

Primary Author: Subin Sunny, The Brooklyn Hospital Center, NY; **Email:** subin.sunny1@gmail.com

Additional Author (s):
Thy Le

Purpose: Bacterial resistance is a growing problem that poses a significant threat to public health. Infections caused by gram-negative multi-drug resistant organisms (MDROs) are particularly problematic due to their adaptability and multiple mechanisms of resistance. Ceftolozane/tazobactam is a novel antibiotic that has activity against multiple gram-negative MDROs. Ceftolozane/tazobactam is approved for the treatment of complicated intra-abdominal infections in combination with metronidazole and for complicated urinary tract infections. Limited evidence exists that evaluates its use for other indications. The objective of this study is to describe the use of ceftolazone/tazobactam for the treatment of non-approved indications caused by gram-negative MDROs. Adult patients (age > 21 years) who were treated with ceftolozane/tazobactam during hospitalization at The Brooklyn Hospital Center for indications other than complicated urinary tract or complicated intra-abdominal infections will be included in this retrospective chart review. The following data will be collected: age, gender, race, comorbidities, renal function, MDRO risk factors, previous antibiotics, source of infection, causative organism, ceftolozane/tazobactam MIC (as available), duration of antibiotics, duration of hospital stay, clinical outcome and microbiologic outcome.

Methods:

Results:

Conclusion:

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-325

Poster Title: Comparing the hemodynamic adverse effects of dexmedetomidine and propofol in adult critically ill patients

Primary Author: Yae-Ji Kim, The Brooklyn Hospital Center, NY; **Email:** yjkim@tbh.org

Additional Author (s):
Karina Muzykovsky

Purpose: Non-benzodiazepine based sedation, such as propofol and dexmedetomidine, are preferred in mechanically ventilated adult ICU patients; however, both of these agents are linked to hemodynamic adverse effects. Propofol is a short acting, lipophilic IV sedative that is largely used for ICU sedation that is known to cause hypotension due to systemic vasodilation. Dexmedetomidine is a selective 2 receptor agonist that can be used as an alternative for ICU sedation which also commonly causes hypotension. The purpose of this study is to compare hemodynamic adverse effects of dexmedetomidine and propofol in adult intensive care unit.

Methods: A retrospective chart review will be conducted on mechanically ventilated patients, age 21 years and older, in the ICU and SICU that have received dexmedetomidine and/or from January 2011 to June 2016. Patients will be included if they received the above mentioned sedatives for at least 24 hours. Patients who received dexmedetomidine and/or propofol for procedural sedation, hypothermia management, and cardiac patients will be excluded from the study. Heart rate, blood pressure, the amount of IV fluid boluses given, vasopressor and antihypertensive use will be compared. This is a quality improvement project and has been granted exemption from IRB review.

Results: Currently in progress. Will present at midyear clinical meeting.

Conclusion: Currently in progress. Will present at midyear clinical meeting.

Submission Category: Ambulatory Care

Submission Type: Case Report

Session-Board Number: 11-326

Poster Title: Efficacy and safety of administering more than 80 units of insulin degludec in a single dose

Primary Author: Shujaat Bhatti, The Brooklyn Hospital Center, NY; **Email:** shujaat.b.bhatti@gmail.com

Additional Author (s):
Elise Kim

Purpose: There is a growing population of patients with uncontrolled diabetes, leading to more patients requiring larger amounts of insulin. As the maximum amount of injection per dose is 80 units on most insulin pens, patients are often needing to administer two separate injections of their daily basal insulin. Fortunately, the new ultra-long acting insulin, insulin degludec U-200 pen, is capable of administering up to 160 units in a single injection. However, it is unknown if there is a maximum amount of insulin degludec that can be administered in a single injection. In this case series, patients at the pharmacotherapy clinics of a hospital in Brooklyn, New York who receive more than 80 units of insulin degludec in a single injection per day will be discussed. Patient demographics, such as age, race, and BMI will be collected. To assess efficacy and safety, patient's previous insulin regimen prior to insulin degludec, insulin degludec dose, A1c trend, self-monitoring blood glucose levels, and any self-reported symptoms of hypoglycemia will also be collected.

Methods:

Results:

Conclusion:

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-327

Poster Title: Assessing patient knowledge of hepatitis C virus (HCV), testing, and treatment among high-risk populations in the Emergency Department

Primary Author: Katlyn Grossman, The Brooklyn Hospital Center, NY; **Email:** kgrossman@tbh.org

Additional Author (s):
Agnes Cha

Purpose: New York State law requires patients born between 1945 and 1965 receiving hospital or primary care be offered a HCV screening test. At The Brooklyn Hospital Center, protocol requires all patients be offered HCV screening at triage in the Emergency Department. Previous literature has shown that public knowledge of HCV is low. There is concern that if high risk patients do not have appropriate knowledge of hepatitis C and its testing, they may deny hepatitis C screening. The objective of this study is to evaluate the knowledge of high risk patients on hepatitis C, testing, and treatment.

Methods: This study will be submitted to the institutional review board (IRB) for approval. Patients will be assessed after admission to the adult emergency department and considered high risk of being HCV positive per the Center for Disease Control (CDC) recommendations. Patients identified will include individuals born between 1945 and 1965, former or current intravenous drug users, patients on hemodialysis, individuals with HIV, and individuals with abnormal liver function tests. Patients who have previously been diagnosed with hepatitis C, those with altered mental status, inability to communicate, and those with life threatening emergencies will be excluded. Structured surveys will be used to assess patient knowledge of HCV and testing. Patients will be asked questions from an adapted version of the validated Canadian brief hepatitis C knowledge scale. Their knowledge of HCV testing will be determined by asking patients whether they were offered a HCV test by a medical provider and whether they are aware that they are indicated for routine HCV testing. Patient knowledge of HCV treatment will be assessed using questions regarding perceived indication, cure rate, side effects, and names of HCV medications.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 11-328

Poster Title: Analysis of the implementation and optimization of automated dispensing cabinets in a mid-sized urban hospital

Primary Author: Keene Saavedra, The Brooklyn Hospital Center, NY; **Email:** keene.saavedra7590@gmail.com

Additional Author (s):
Gregory Stein

Purpose: Automated dispensing cabinets (ADCs) can improve pharmacy and nursing efficiency, decrease diversion, and reduce medication errors. However, there is a paucity of literature describing methods of confirming proper implementation and optimization of ADCs. At The Brooklyn Hospital Center, new ADCs were installed on the labor and delivery unit and the medical intensive care unit. The implementation of these ADCs presented unique challenges. The objective of this study is to describe and assess the effectiveness of the implementation and optimization interventions made after activation of the ADCs utilizing a variety of reportable measures.

Methods: This study will be submitted to the Institutional Review Board for approval. After activation of the ADCs, the interventions to improve performance were unique to each unit. Potential challenges of implementation will be illustrated by reportable measures, including manually admitted patients at the ADC, number of medications removed from the automated dispensing cabinet without an order (also known as overrides), number of medications removed on override without subsequent orders placed in the electronic medical records (EMR), also known as unreconciled orders, and overutilization or redundancies found in cart-fill medication delivery systems, including the robot cart-fill. After implementation challenges have been resolved, more routine optimization methodology will be performed utilizing a number of reports including: ordered meds not stocked, stocked meds without orders, expired medications, last pocket access, orders by unit, stock management by station, refill activities, and optimization by station. Appropriate measures and report data will be trended following the dates of implementation. Report data will then be analyzed before and after implementation and optimization interventions to assess effectiveness of the interventions made after activation of the ADCs.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-329

Poster Title: Comparison of the efficacy and safety of filgrastim-sndz to filgrastim: a single center retrospective study

Primary Author: Julia Zecchini, The Mount Sinai Hospital, NY; **Email:** julia.zecchini@mountsinai.org

Additional Author (s):
Kendra Yum
Sara Kim

Purpose: Filgrastim-sndz (Zarxio®) was approved by the FDA in March 2015 as a biosimilar product of its reference product, filgrastim (Neupogen®) for all five indications. The NCCN Clinical Practice Guidelines has incorporated filgrastim-sndz into its recommendations as a category 1 recommendation for use in settings of febrile neutropenia, myelosuppressive chemotherapy administration, and post hematopoietic stem cell transplant. In March 2016, our institution switched from filgrastim to filgrastim-sndz for all indications as a cost saving initiative. The purpose of this study is to assess for any difference in clinical and safety outcomes between the biosimilar and reference product.

Methods: This study is pending approval by The Mount Sinai Hospital's Institutional Review Board. A one year, single institution, retrospective chart review between September 2015 and August 2016 will be conducted of patients who received either filgrastim or filgrastim-sndz. Adults (age >18 years) who have received filgrastim or filgrastim-sndz for either prophylaxis of chemotherapy-induced myelosuppression or for neutrophil recovery after autologous stem cell transplant will be included. Patients will be excluded if they have a diagnosis of myeloid leukemia. The following patient data will be collected: age, weight, indication, dose, date of first dose, number of doses received, white blood cell count and absolute neutrophil count at initiation and discontinuation of therapy, number of previous chemotherapy regimens received, and reports of adverse events including bone pain, pulmonary toxicity, or splenic rupture. The objective of this study is to compare clinical efficacy and safety between filgrastim-sndz and filgrastim.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-330

Poster Title: Impact of a 72 hour Best Practice Alert on Duration of Antibiotic Therapy

Primary Author: Kori Hamman, The Mount Sinai Hospital, NY; **Email:** kori.hamman@mountsinai.org

Additional Author (s):
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Meenakshi Rana

Purpose: Antimicrobial stewardship has reached a critical turning point in addressing antibiotic resistance. The CDC recommends hospitals adopt an "antibiotic time out" as a core element in antibiotic stewardship programs. At the Mount Sinai Hospital, a best practice alert (BPA) was implemented on all intravenous antibiotics in June 2015 notifying prescribers on days five, six and seven reminding them of an automatic antibiotic stop on day seven. An additional 72 hour notification will be implemented in November 2016. The purpose of this study is to evaluate the influence of the 72 hour BPA on overall length of antibiotic therapy.

Methods: A retrospective analysis will be performed assessing the effect of the 72 hour best practice alert on all intravenous antibiotics and their overall length of use. Data to be investigated includes adult patients on broad spectrum antimicrobials such as cefepime, ceftriaxone, ertapenem, imipenem/cilastatin and piperacillin/tazobactam. Patients to be excluded are those with less than one day of antibiotic therapy in the emergency department. The primary endpoint will be overall antibiotic usage expressed as days of therapy (DOT) per 1000 patient-days (PD). Secondary outcomes will include the number of orders discontinued on days three, four, five, six and seven; the number of orders ending on day seven; and the number of orders renewed after seven days. Appropriate statistical analysis will be performed to evaluate each outcome. This data will be analyzed three months prior and three months after implementation of the 72 hour best practice alert. All data will be analyzed discretely without personal identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-331

Poster Title: Evaluation of bortezomib use in patients undergoing desensitization prior to intestinal transplantation

Primary Author: Daryl Nnani, The Mount Sinai Hospital, NY; **Email:** daryl.nnani@mountsinai.org

Additional Author (s):
Andrew Santeusanio

Purpose: Intestinal transplant is one of the least common forms of organ transplantation. Only 106 intestinal transplants were performed in the United States in 2012, representing a 46 percent decline from 2007. The contribution of HLA allosensitization to wait-list times and poor post-transplant outcomes can be dramatic. Classic desensitization strategies decrease preformed antibodies and facilitate immunologic compatibility, but do not target antibody secreting plasma cells responsible for alloantibody production. Bortezomib, a selective inhibitor of the 26S proteasome with anti-plasma cell activity, represents an additional therapeutic option for desensitization prior to small bowel transplant to decrease wait-times and increase transplantation rates.

Methods: This was a single center, retrospective cohort review of patients receiving an intestinal transplant at the Mount Sinai Hospital (institutional review board approval pending) to assess the safety and efficacy of bortezomib desensitization therapy relative to standard rituximab. Electronic medical records were reviewed to identify all patients that received an intestinal transplant between 2010-2016 with prior bortezomib or rituximab desensitization therapy. Any patients missing data were excluded from the chart review. Baseline demographic data was collected for all patients including: age, sex, weight, etiology of intestinal failure, body mass index, glomerular filtration rate, and total bilirubin. Appropriateness of desensitization therapy was determined by evaluating for the prescription of pre-medications, dose and date of first desensitization, route of administration, and cycles of desensitization administered. Efficacy was assessed by evaluating patient's calculated panel reactive antibody pre-desensitization and post-desensitization, presence of donor specific antibodies, and rejection at one-year post-transplant. Additional safety data including: complete blood counts, infection rates within one-month post-transplant, and documented infusion reactions were also collected to account for drug related toxicities.

Results: Pending

Conclusion: Pending

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-332

Poster Title: Delay in initiating prophylactic fluoroquinolones post autologous hematopoietic stem cell transplantation from Day 0 to neutropenia and the development of Clostridium difficile infection and bacteremia

Primary Author: Nicole Davis, The Mount Sinai Medical Center, NY; **Email:** nicole.davis@mountsinai.org

Additional Author (s):
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Kendra Yum

Purpose: Following hematopoietic stem cell transplant, patients are immunocompromised and are usually administered prophylactic antibiotics, commonly fluoroquinolones, in order to prevent bacterial infection. Determining the appropriate time to begin fluoroquinolone administration may minimize the risk of Clostridium difficile infection as studies have identified this infection as a common complication in this population. This study will evaluate the initiation of prophylactic fluoroquinolones at the time of neutropenia (ANC < 500) in comparison to Day 0 (day of stem cell infusion) and assess if this delayed initiation has a positive impact on the risk of Clostridium difficile infection without increasing the risk of bacteremia.

Methods: This study will be submitted to the Institutional Review Board for approval. In this 1-year, single-center retrospective cohort study, a bone marrow transplant database will be used to identify adult patients who received an autologous stem cell transplant at The Mount Sinai Hospital from April 2016 to September 2016. Patients who received levofloxacin as prophylaxis after their transplant will be included. In efforts to reduce the rate of Clostridium difficile, initiation of levofloxacin prophylaxis was initially delayed from Day 0 to Day +3 of transplant beginning April 30, 2015. This practice was subsequently revised to further delay the initiation once the ANC < 500 beginning April 2016. Objectives of this study are to assess the incidence of Clostridium difficile infection and incidence of bacteremia in patients who initiated levofloxacin once the patient's ANC fell to at least 500 and compare to those who initiated on Day 0. The following data will be collected from the medical record: date of birth, gender, underlying malignancy, use of H2 receptor antagonist/proton pump inhibitors, conditioning regimen, ANC,

date of neutropenia, Clostridium difficile infection, and bacteremia within 30 days post-transplant. Appropriate statistical analysis will be performed to evaluate whether delaying the initiation of fluoroquinolone prophylaxis to ANC < 500 will lead to a decreased incidence of Clostridium difficile without having a negative effect on the rate of bacteremia in this population.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-333

Poster Title: Evaluation of venous-thromboembolism risk assessment tools in medical and surgical patients in a 351-bed community teaching hospital

Primary Author: Robert Marquis, The Unity Hospital of Rochester, NY; **Email:** robert.marquis@rochesterregional.org

Additional Author (s):
Rebecca Wedow
Shashi Patel

Purpose: Venous-thromboembolism (VTE) can cause significant morbidity and mortality in medical and surgical patients. VTE prophylaxis assessments tools ensure patient risks are addressed in order to reduce the rates of VTE in the hospital setting. The Padua Prediction Score (PPS) and The Caprini Risk Assessment (CRA) are evidence-based scoring tools that reduce VTE incidence. This retrospective chart review will compare the results of the two risk assessment tools when applied to both medical and surgical patients.

Methods: Retrospective data will be obtained from a 351-bed community teaching hospital on medical and surgical patients. One hundred patients 18 years of age and older admitted from September 1, 2016 through September 30, 2016 will be randomly chosen for VTE risk assessment. Randomization will be performed using the patient census list for the month of September and a selection will be made at every third patient in the system until fifty surgical patients and fifty medical patients are chosen. Patients requiring full anticoagulation, patients continued on home anticoagulation, and patients under the age of 18 will be excluded during the randomization process. Data collected will include PPS score and CRA score as well as the corresponding risk level (low, medium, and high risk). The type of regimen initiated, number and type of pharmacological contraindications, number, type of mechanical contraindications, and appropriateness of initiated regimen will be collected. CRA and PPS scores will be compared using a descriptive statistical analysis.

Results: The analysis of this review is pending

Conclusion: The conclusion of this review is pending

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-334

Poster Title: Evaluation of a pharmacist-led discharge counseling program at a 351-bed community teaching hospital.

Primary Author: Matthew Rudy, The Unity Hospital of Rochester, NY; **Email:** matthew.r.rudy@gmail.com

Additional Author (s):
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Shashi Patel

Purpose: Pharmacist-led discharge counseling has the capacity to elicit a positive influence on patient care. It is associated with a lower thirty day readmission rate, increase detection of preventable adverse drug events, and identification discrepancies in pharmacotherapy during transitions of care. This retrospective observational study aims to evaluate a pharmacist-led discharge counseling program and its effect on thirty day readmission rate.

Methods: This retrospective review will examine discharge data from medical units in a 351-bed community teaching hospital located in Rochester, NY. Data will be collected from patients with documented discharge counseling performed by a pharmacist during the time period of January through March 2016. Utilizing the hospital's electronic medical record, the number of patients discharged with pharmacist counseling and thirty day readmission rate will be collected. Data will be compared to existing literature as well as hospital-wide thirty day readmission rate. Descriptive statistics will be conducted comparing the readmission rate of those patients with and without pharmacist-led discharged counseling. The primary outcome of this study will be the determination of the thirty day readmission rate for pharmacist-counseled patients. Discharge counseling involving alteration in medication regimens will be collected as a secondary outcome.

Results: An analysis of this review is pending.

Conclusion: To follow.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-335

Poster Title: Clinical and economic utility of IV acetaminophen for analgesia in surgical patients

Primary Author: Brandon Bair, The University of Vermont Health-Network Champlain Valley Physicians Hospital, NY; **Email:** bbair@cvph.org

Additional Author (s):

Purpose: While, IV acetaminophen has a favorable pharmacokinetic profile over non-parenteral formulations, its therapeutic benefit remains controversial. A study by Kelly et al, concluded IV acetaminophen did not significantly decrease opioid use or length of stay (LOS) in knee arthroplasty compared to the control group. Whereas, a similarly designed study by Hansen et al, concluded a shorter LOS and decreased hospitalization costs in patients receiving IV acetaminophen in orthopedic surgeries. The effectiveness of adjunctive IV acetaminophen in various surgeries will be evaluated in this study.

Methods: In this retrospective study, the "treatment" group will include all patients who underwent surgery and received at least one dose of IV acetaminophen within corresponding time frames. Patients who underwent similar surgeries but received no doses of IV acetaminophen during the same time frame will serve as the "control" group. Retrospective reports will be obtained to determine the surgical procedure, average total charges, hospital length of stay and total patients for the primary objective. Each of the groups will be further classified as either outpatient or inpatient. Furthermore, the surgical procedures will be grouped into the following categories: abdominal (gall bladder/appendix), gynecological (uterus), obstetric, small intestine, large intestine, hip and knee. For the secondary objectives, pharmacy utilization reports will be utilized to determine the total opioid doses administered (daily and cumulative), total anti-emetics administered and total non-opioid analgesics administered. The total average charges between the two groups will be used to estimate the cost utility associated with IV acetaminophen. The total opioid doses administered between the two groups will be used to estimate any opioid sparing effect of IV acetaminophen. The total anti-emetics used will be used to estimate the difference in side effects between the two groups.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-336

Poster Title: Evaluation of daptomycin use at a large teaching hospital

Primary Author: Arsheena Yassin, Touro College of Pharmacy/Mount Sinai Hospital, NY; **Email:** arsheenayassin@gmail.com

Additional Author (s):
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Purpose: Daptomycin is a lipopeptide antibiotic used in the treatment of systemic and life-threatening infections caused by gram-positive organisms. Evaluation of its use is essential for enhancing antimicrobial stewardship practices, especially at large hospitals. The objectives of this study will be to evaluate the current prescribing patterns of daptomycin at Mount Sinai Hospital, to determine the appropriateness of daptomycin use, and to aid the antimicrobial stewardship program in developing clinical decision pathways for the appropriate use of daptomycin.

Methods: This study will be a single center, retrospective evaluation of all adult patients admitted to Mount Sinai Hospital who received at least one dose of daptomycin. The electronic medical record system will be utilized for data collection. Information that will be collected for each patient will include patient demographics; renal function; allergies; co-morbidities; concomitant synergistic antibiotics or statin use; prior vancomycin use; dose, duration and indication for daptomycin; microbiology; prescribers; side effects; and monitoring parameters, such as weekly creatinine phosphokinase (CPK). For each patient, determination of whether the use of daptomycin was appropriate or not will be assessed. This will be done based on the indication and rationale for daptomycin use as determined by a clinical team of pharmacists and physicians. The primary outcome assessed will be the appropriate use of daptomycin. The secondary outcomes will include monitoring parameters done; occurrence of side effects, such as CPK elevation and Clostridium difficile infections; the cost of daptomycin from appropriate and inappropriate uses; and resistance patterns, including minimum inhibitory concentration (MIC) changes during daptomycin therapy. The results of this study will be used to guide

appropriate daptomycin prescribing practices and to implement clinical decision pathway to aid antimicrobial stewardship at Mount Sinai Hospital.

Results: N/A

Conclusion: Results and conclusions of this study will be presented at the 2016 ASHP Midyear Clinical Meeting.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-337

Poster Title: Determining the impact of a pharmacy-driven transition of care program on heart failure patient readmission rates at a community teaching hospital.

Primary Author: Neha Kumar, UHS Hospitals, NY; **Email:** nehakumar36@gmail.com

Additional Author (s):
Lyndsay Wormuth
Amber Jerauld

Purpose: Heart failure is one of the leading causes of hospital readmissions with adverse effects on the allocation of hospital resources and reimbursement. Therefore, compliance with the Joint Commission Heart Failure Core Measures and reduction in 30-day readmission rates following hospitalization for acute decompensated heart failure are established goals for health care systems nationwide. The objective of this study is to determine the impact of a pharmacy-driven transition of care program on unplanned healthcare utilization, specifically 30-day hospital readmission following discharge.

Methods: This is an observational study conducted at a community teaching hospital with a historical control utilizing a retrospective cohort study design. The control group included patients admitted with a diagnosis of heart failure or acute decompensated heart failure between September 2015 and February 2016. The intervention group included patients admitted with a diagnosis of heart failure or acute decompensated heart failure from September 2016 through February 2017. Interventions included pharmacist-led medication reconciliation at admission and discharge, inpatient medication/disease state counseling at admission with application of adherence tools (ie. patient education booklets, behavioral aids, and referral to relief services for those with financial concerns), inpatient medication/disease state counseling at discharge with application of adherence tools, and individualized telephone follow-up by a pharmacist within 72 hours of discharge. The primary outcome is time to first unplanned health care event, defined as hospital readmission within 30-days of discharge. The secondary outcome is impact on HCAHPS scores for the control group versus the intervention group.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-338

Poster Title: Clinical impact of a pharmacist-managed renal dosing service

Primary Author: Taylor Kelsey, UHS Hospitals, NY; **Email:** taylorladdkelsey@gmail.com

Additional Author (s):
Caitlyn Burnett

Purpose: Appropriate drug dosing in patients with renal impairment is paramount to avoiding unwanted drug effects and promoting optimal patient outcomes. The purpose of this study is to assess the rate of inappropriate fluoroquinolone dosing and to evaluate the impact of a newly implemented, pharmacist-driven, renal dosing service on dose adjustment occurrences, adverse drug events, length of hospitalization, and duration of antibiotic use.

Methods: This is a retrospective, observational study comparing a pre-implementation and a post-implementation study groups from a 280-bed teaching hospital in upstate New York. The pre-implementation group, serving as a control, will include adult, non-pregnant, patients admitted to the hospital, receiving fluoroquinolone therapy with renal impairment, not requiring dialysis, between the months of January and March 2016. The post-implementation data will be collected one calendar year later and include patients with the same characteristics. The primary outcome of this study is incidence rate of inappropriate dosing of fluoroquinolone, defined as incorrect dose and/or frequency based on calculated creatinine clearance using the Cockcroft-Gault equation. Sub-group analyses of the primary outcome will include incidence of under-dose versus overdose and timing of inappropriate dose in relation to hospital stay. Secondary outcomes assessed will be length of hospital stay and number of adverse drug reactions.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-339

Poster Title: Chronic Obstructive Pulmonary Disease (COPD): Pharmacist intervention on medication possession ratio (MPR) and inhaler technique

Primary Author: Tera McIlwain, Union Medical Pharmacy, NY; **Email:** tmcilwain@unionmedicalrx.com

Additional Author (s):
Gregory Notaro
James Notaro
Mary Lou Notaro
Victoria Belousova

Purpose: COPD is the third leading cause of death in the United States, responsible for over 134,000 deaths per year and $32.1 billion in medical costs in 2010. Non-adherence and improper use of inhalers can lead to treatment failure and increased risk of hospitalization. The primary objective of this study is to determine if pharmacist intervention can lead to improved medication adherence rates (measured by MPR) and inhaler technique. Secondary objectives include reduction in COPD symptoms and exacerbations, improvements in the Centers for Medicare & Medicaid Services (CMS) adherence Star Ratings, and improved health status through self-assessment.

Methods: This study has been submitted for approval to the Institutional Review Board at D'Youville College. The pharmacy's refill reminder program, Health-Minder, will be utilized to identify patients prescribed inhalers who have a MPR < 80%. These patients will be screened for COPD or asthma, and those with COPD will be asked to participate in the study. If patient agrees, a pre- questionnaire will be administered over the phone, evaluating general information (e.g. smoking, occupational, and vaccination history; hospital admissions due to COPD exacerbation). In-person appointments will be scheduled with a dedicated pharmacist for medication reviews and assessments of health status and symptom and exacerbation occurrence. Patients will be evaluated on proper inhaler technique and be provided information on COPD and the importance of medication adherence. Post-interview, patients will receive handouts of all the information that was discussed and resources for self-management. Following the initial review, patients will be scheduled for three and six month

follow-up appointments, for reassessment of medication adherence, inhaler technique, symptom/exacerbation occurrence, and health status. The study will track patient's age, number and type of COPD medications, number and severity of exacerbations in the previous year, and adherence using a calculated MPR.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-340

Poster Title: Influence of Pneumocystis jiroveci pneumonia prophylactic agents on the occurrence of bacteriuria after renal transplantation

Primary Author: Saloni Patel, University at Buffalo School of Pharmacy and Pharmaceutical Sciences / Erie County Medical Center, NY; **Email:** svpatel4@buffalo.edu

Additional Author (s):
Michael Ott

Purpose: Urinary Tract Infections (UTIs) are a major cause of morbidity among renal transplant recipients. Trimethoprim-sulfamethoxazole (TMP-SMX) and other second line agents are often used for Pneumocystis jiroveci pneumonia (PJP) prophylaxis after renal transplantation. Some of the PJP prophylactic agents may have an added benefit of preventing UTIs. This study aims to determine the influence of TMP-SMX versus the composite of dapsone, atovaquone, and inhaled pentamidine intended as PJP prophylaxis on the occurrence of asymptomatic bacteriuria (ASB) and UTIs (cystitis or allograft pyelonephritis) during the post-renal transplant period.

Methods: This study has been submitted to the Institutional Review Board for approval. Recipients of renal transplants at Erie County Medical Center between January 1, 2013 and June 30, 2016 will be identified using the electronic medical record. Eligible patients will be divided into two groups based on the PJP prophylactic agent they received: TMP-SMX (group 1) or dapsone, atovaquone, or inhaled pentamidine (group 2), and followed for three months post-transplant. Data collection will involve recording the recipient's demographics (age, gender, weight, race, allergies, transplant date, co-morbidities), type of primary renal disease (hypertension, cystic renal disease, immunoglobulin A nephropathy, unknown origin, others), donor factors (living vs. deceased donor), recipient factors (previous transplant, CMV disease, use of indwelling urinary catheter, rejection episodes), and outcomes data (time to first event, pathogen(s) in urine culture, reason for hospitalization, number of ASB/UTI episodes). All individually identifiable health information will be de-identified prior to entry of subject data into the study database. A Cox proportional hazard model will be used to determine the hazard of developing bacteriuria due to PJP prophylaxis. The group that developed ASB or UTI will be compared to the group that did not in order to determine the risk factors for bacteriuria. To

determine the risk of developing ASB or UTI according to TMP/SMX prophylaxis, variables for TMP/SMX use versus other PJP prophylactic agents will be compared.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-341

Poster Title: Analysis of opioid treatment patterns for opioid naïve members at a regional health plan

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Purpose: In response to increasing concerns about the opioid epidemic, we will analyze opioid utilization patterns using prescription claims data at a regional health plan.

Methods: This will be a retrospective analysis of prescription claims data at a regional health plan from July 1, 2013 to December 31, 2015. Opioid claims will be included for opioid naïve members 18 years and older, for all lines of business (Medicare, Medicaid, and Commercial). Members must have continuous enrollment for 1 year following the first fill of an opioid medication, which will be referred to as the incident fill. The incident fill must have occurred between January 1, 2014 and December 31, 2014. Members will be excluded if they have an opioid claim in the 6 months prior to the incident fill. The primary outcomes of the study will be total duration of opioid therapy and frequency of use. Infrequent use is defined as less than or equal to 90 days, moderate as 91-180 days and chronic as more than 180 days of therapy over the course of 1 year. Secondary outcome measures will include time to and rate of conversion from immediate-release (IR) to extended-release (ER) and factors associated with moderate and chronic use of IR opioids. Multivariate analysis will be used to assess factors associated with moderate and chronic use of IR opioids. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-342

Poster Title: Effects of statins and cholesterol on patient aggression: Is there a correlation?

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Purpose: There is little data to support or refute the claim that statins or low serum cholesterol does in fact increase a patient's risk of aggression. It is imperative we are aware of best practices to ensure that we are not unknowingly worsening a patient's condition. This study will identify if there is a relationship between 1.) statin use and increased aggression and 2.) cholesterol levels and increased aggression in psychiatric inpatients.

Methods: This study evaluates a best practice medication use evaluation (MUE) conducted by our Pharmacy and Therapeutics (P&T) Committee and was then submitted to our Institutional Review Board of record (New York State Psychiatric Institute). A patient chart review will be conducted for all male and female patients greater than 18 years of age institutionalized at the Buffalo Psychiatric Center from January 1, 2011 to December 31, 2015. Statin therapy, measured lipid panel (including total cholesterol, low-density lipoprotein (LDL), high-density lipoprotein (HDL) and triglycerides) and requirement of a psychiatric emergency code ("Code Green"), as a result of agitation, will be noted. Inpatients who did not receive cholesterol-lowering therapy or require a "Code Green" will be used as controls. Individuals without a lipid panel obtained during hospitalization and those with a criminal procedural law (CPL) designation or unknown statin therapy status will be excluded. Appropriate statistical analyses will be conducted to determine if there is an increased risk of aggression with statin use and if aggression is a consequence of low serum cholesterol levels.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-343

Poster Title: Effect of changing COPD triple therapy inhaler combinations on pulmonary function

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Purpose: With recently approved inhaled agents, there are many therapeutic options for treatment of chronic obstructive pulmonary disease. Previous studies have shown superiority of long-acting beta agonist/long-acting muscarinic antagonist combination inhalers in reducing hospitalizations compared to inhaled corticosteroid/long-acting beta agonist combination inhalers. The objective of this study was to evaluate changes in lung function as measured by pulmonary function tests in patients receiving triple therapy when changed from an inhaled corticosteroid/long-acting beta agonist combination inhaler with separate long-acting muscarinic antagonist inhaler to a long-acting muscarinic antagonist/long-acting beta agonist combination inhaler with separate inhaled corticosteroid inhaler.

Methods: This retrospective, observational study will be submitted to the Internal Review Board for approval. As part of a cost savings program, patients with prescriptions for an inhaled corticosteroid/long acting beta agonist combination inhaler and a separate long-acting muscarinic antagonist inhaler were identified and changed to a long-acting beta agonist/long-acting muscarinic antagonist combination inhaler and a separate inhaled corticosteroid inhaler. Of the patients who were changed, those with pulmonary function tests available within the last 6 months prior to the change and repeat tests within the 6 months following the change will be included for evaluation. The following data will be collected: gender, age, pre-change chronic obstructive pulmonary disease regimen, post-change chronic obstructive pulmonary disease regimen, specific comorbidities (asthma, sleep apnea, obesity, heart failure), smoking status, influenza and pneumococcal vaccination status, pulmonary function tests (pre-, post-, and predicted forced expiratory volume in 1 second and pre-, post-, and predicted forced vital capacity), number of moderate exacerbations within the last 12 months prior to the change,

and number of severe exacerbations within the last 12 months prior to the change. All data will be de-identified prior to data analysis. For each patient, the PFTs before the change will be compared with PFTs after the change to evaluate the effects of the new regimen on pulmonary function.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Evaluative Study

Session-Board Number: 11-344

Poster Title: Evaluation of a hepatitis C patient management program at a university specialty pharmacy.

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Purpose: Specialty pharmacy is a unique and growing industry, where specialty medications are used in the treatment of complex, chronic or rare disease states, such as hepatitis C. University of Rochester Specialty Pharmacy hepatitis C patient management program comprises many unique qualities; one being integration with the Gastroenterology and Hepatology Division within the University of Rochester Medical Center (URMC), which offers the opportunity of increased involvement in patient care. The primary purpose of this study is to assess treatment success through the incidence of achieving a sustained virologic response (SVR) of patients served at UR Specialty Pharmacy versus other non-integrated pharmacies.

Methods: This is a single-center retrospective cohort study of adults belonging to the Gastroenterology and Hepatology Division within URMC prescribed hepatitis C therapy between January 1st, 2014 and July 31st, 2016. In addition to the primary objective of the incidence of achieving SVR, adherence to therapy will be assessed by the proportion-of-days-covered model (PDC). Also secondarily, delays in therapy initiation, early treatment discontinuation, and viral load obtainment 12 weeks or greater post-therapy completion will be measured. Lastly, a multiple logistic regression model will be used to identify pre-defined independent predictors of treatment failure.

Results: The total number of subjects prescribed hepatitis C virus therapy during the study duration will be presented. The number and percentage of subjects that achieved SVR will be

presented and compared between study arms. Pre-defined characteristics of treatment failure will be presented using odds ratios with associated 95% confidence intervals.

Conclusion: The evaluation of various aspects of hepatitis C therapy will be valuable in evaluating the success of the UR Specialty Pharmacy hepatitis C patient management program, which may be used as a framework for other institutions. Finally, identification of characteristics associated with hepatitis C treatment failure will have clinical implications for identifying areas of opportunity to optimize patient outcomes.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-345

Poster Title: Evaluation of changes made by pharmacists during medication order verification process at an academic medical center

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Purpose: Pharmacists at Strong Memorial Hospital (SMH) and Golisano Children's Hospital (GCH) of the University of Rochester Medical Center verify a large number of medication orders. Departmental data estimates that pharmacists spend a significant amount of time reviewing orders. In order to improve pharmacists' workload efficiency, the verification process will be analyzed to assess the extent that pharmacists modify orders after providers' entry. The primary objective is to quantify the number of medication orders changed during the verification process. The secondary objectives are to evaluate proportions of changed orders in each unit and aspects of order fields modified for process improvements.

Methods: The study protocol was approved by the Institutional Review Board. All inpatient orders verified by pharmacists at SMH and GCH between April 1 and May 31, 2016 were extracted from the hospital electronic medical record. The orders are being retrospectively reviewed to classify the fields that pharmacists have the capability to modify during the verification process into clinical (medications, priority, administration dose, ordered dose, route, rate, duration, volume, frequency, first dose, number of doses, start time, end time, dispense code, note to pharmacy and administration instructions) and logistical (package) categories for further analysis. Preliminary analysis identified a total of 304,568 orders during the study time frame. Of this, 13,763 orders have been excluded because they were auto-verified by the system upon provider ordering due to being floor stock medications. A total of 290,805 orders have been identified as being verified solely by pharmacists and will be used for

further analyses. Data will be further investigated to determine the breakdown of order changes by the following patient care units: adult, pediatric, emergency department, surgical and cancer center as well as assess trends in modifications of order fields and medication orders in each patient care unit. Further analyses will target areas to improve workflow processes. Data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-346

Poster Title: Assessment of Extemporaneous Non-Sterile Compounding at a Large Academic Medical Center

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Purpose: This study is to characterize the non-sterile extemporaneously compounded medication orders generated to accommodate the needs of patients seen at large academic medical centers. Some of the prescribed therapies could not be fulfilled using commercially manufactured products, instead requiring compounding in the institution's pharmacy. Extemporaneously compounded products require specialized equipment and staff, as well as carry additional risks as compared to commercially manufactured products (such as potential contamination or human error), and also have mandated shorter expiration dates (potential waste). A better understanding of the non-sterile extemporaneously compounded orders could help the large medical center improve overall care and efficiency.

Methods: The study protocol was deemed exempt by the hospital's Institutional Review Board. An electronic medical record system was used to generate a list of products compounded at Strong Memorial Hospital between January 1, 2016 and June 30, 2016. Only non-sterile extemporaneously compounded products for inpatients were included. Data were collected to assess practices of ordering of non-sterile extemporaneously compounded products, the time and assets allocated to complete these orders and the details of these orders. Assessment of these data points were compared to commercially available products. Appropriate descriptive statistics were calculated for all variables. Microsoft Excel was used to organize and quantify data.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-347

Poster Title: Evaluation of the efficacy of 125, 250, and 500 milligrams of oral vancomycin in the treatment of Clostridium difficile

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Purpose: Clostridium difficile (C.difficile), an anaerobic spore-forming organism, attacks the colonic epithelium and causes cell death, resulting in C.difficile-associated diarrhea, pseudomembranous colitis, toxic megacolon, and death. Metronidazole and oral vancomycin have been the gold standard for treatment. Relapse rates with conventional dosing are as high as thirty percent, prompting a search for the most superior dosing regimen. Successful treatment has been achieved utilizing doses of vancomycin ranging from 125 to 500 milligrams four times daily, with limited data comparing their efficacy. The study objective is to compare each dose of oral vancomycin in the treatment of C. difficile to optimize outcomes.

Methods: MedMined®, an online data mining software that is integrated with the hospital's electronic medical record system, will identify patients who have tested positive for C. difficile toxin via polymerase chain reaction Patients who received oral vancomycin will be eligible for study inclusion. The following data will be collected: age, gender, date of admission, date of positive C. difficile test, date of initiation of vancomycin therapy, the various doses and duration of treatment of each dose, as well the reasons for dose changes. For patients concurrently on metronidazole, information regarding the dose and duration will be recorded. In order to evaluate efficacy, the initial number of stools per day, number of stools seventy two hours after treatment initiation and each dose change, progression to colitis, and days to soft stool will be recorded. All data will be recorded without patient identifiers and maintained confidentially. Data will be reviewed to determine if there is an optimal dose of vancomycin for the treatment of C.difficile.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 11-348

Poster Title: Zolpidem given for the arousal of comatose patients in the intensive care unit

Primary Author: Peter Wirkowski, Winthrop University Hospital, NY; **Email:** pewirkowski@gmail.com

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Purpose: Zolpidem has traditionally been used to initiate sleep and is FDA approved for the short-term treatment of insomnia. However, there have been a series of case-reports that demonstrate a paradoxical effect in comatose patients in the intensive care unit (ICU). In a subset of these patients, Zolpidem actually induces arousal and increases activity. The objective of this study is to determine if a subset of comatose patients treated with Zolpidem in the intensive care units of a community hospital exhibit paradoxical arousal and increased activity.

Methods: This retrospective chart-review study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients in all of the hospital's ICU's who were prescribed Zolpidem between the hours of six in the morning and six in the evening. Patient charts will be reviewed and the following data will be collected: patient age, gender, ethnicity, physical examination, current medications, sleep times, neurological examination and provider notes. All data will be recorded without patient identifiers and maintained confidentially. Provider documentation of increased activity, sleep times, time awake, and Zolpidem dosage will be used to determine the effect of Zolpidem on patient arousal. The total group of patients analyzed will be separated into two groups: responders and non-responders. Average baseline characteristics, dosages of Zolpidem, time of increased activity and provider noted response in treatment will be averaged for both treatment groups to determine significance. The data collected will help determine if there is a statistically significant increased rate of arousal in comatose patients who are treated with Zolpidem. If there is enough patient data, the effect of different dosages and a possible correlation to increased activity will also be analyzed.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-349

Poster Title: Evaluate the success of achieving therapeutic vancomycin trough levels in pediatric inpatients with existing dosing guidelines

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Purpose: Vancomycin is a glycopeptide antibiotic used for the treatment of methicillin-resistant Staphylococcus aureus in pediatric patients. The minimum inhibitory concentration (MIC) has been used to determine its clinical efficacy. Recently, this MIC increased from 1 to 2mg/dL, requiring higher therapeutic ranges in adult patients. Existing vancomycin dosing guidelines in children rely on older MICs. As such, many pediatric patients have sub-therapeutic trough levels. Our goal is to evaluate whether our vancomycin trough levels fall within the new therapeutic ranges. These levels will be correlated to efficacy, safety, and patient outcome. Ultimately, we aim to update our dosing guidelines accordingly.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a retrospective chart review of pediatric patients admitted to our institution, between September 1, 2015 and September 1, 2016. The electronic medical record system will be used to identify patients who qualify for inclusion in the study. Inclusion criteria are children less than 18 years of age who received vancomycin and had at least 1 trough level reported. Excluded are non-detectable levels, missed doses, or excessively delayed drug administration. The following data will be collected: patient medical history, age, weight, allergies, concomitant medications, indication for vancomycin, site of infection, culture results, white blood cell count and differential, and MIC of identified microorganisms, number of doses prior to level(s), vancomycin dosage and trough level(s), timing of dose(s) and level(s), serum creatinine, blood urea nitrogen, and urine output. We will record data on patient outcome to assess the efficacy of vancomycin, including positive culture site results or a documentation of a clinical cure, and reported adverse effects and events. Goal trough levels will range from 10 to 20 mg/L, depending on the site of infection. Patients who received vancomycin but did not have levels

sampled, will also be evaluated for their outcome from the infection. Vancomycin trough levels will be assessed for falling within the therapeutic range.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-350

Poster Title: Changes in John Cunningham virus IgG antibody index in fingolimod, rituximab and dimethyl fumarate-treated multiple sclerosis patients

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Purpose: Progressive Multifocal Leukoencephalopathy (PML) is an opportunistic viral infection caused by the John Cunningham virus (JCV). PML occurs in immunocompromised patients and may lead to disability or death. Natalizumab is a therapy for relapsing-remitting forms of multiple sclerosis (MS) that is known to cause PML. Medication monitoring includes trending JCV antibody titers. PML has occurred in MS patients who received fingolimod and dimethyl fumarate in the post-marketing setting. Although rituximab is associated with PML, this relationship has not been reported in MS patients. Our goal is to determine if treatment with fingolimod, rituximab or dimethyl fumarate alters JCV antibody titers.

Methods: This study has been submitted to the Institutional Review Board for approval. This is a retrospective chart review of patients treated at a comprehensive MS care center from January 1, 2013 to September 1, 2016. The electronic medical record will be used to identify patients who qualify for inclusion in this study. Inclusion criteria include: MS patients treated with fingolimod, rituximab or dimethyl fumarate that have a positive JCV antibody titer(s). Exclusion criteria are patients with non-detectable JCV antibody titer(s). The following data will be collected: patient age, gender, race, absolute lymphocyte count(s), and JCV antibody titer(s). With respect to each medication, the drug name, dose, and frequency will be collected. These values will be recorded on a data collection sheet for analysis. JCV antibody titer(s) values will be trended and analyzed for a correlation between their value and treatment by these agents. Elevated JCV antibody titers are known to increase the risk of PML in natalizumab-treated MS

patients. The relationship between JCV titers and PML risk in MS patients treated with fingolimod, rituximab or dimethyl fumarate will be explored.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 11-351

Poster Title: Drug utilization evaluation of phytonadione (vitamin K) at a teaching institution

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Purpose: Venous thromboembolisms and atrial fibrillation are common indications for anticoagulation. Atrial fibrillation is a frequently diagnosed condition which predisposes patients to embolisms and stroke. A common anticoagulant used to treat and prevent embolisms is warfarin, a vitamin K antagonist. In the case of high INR or bleeding, phytonadione is indicated as an antidote for the reversal of warfarin. The objective is to determine if vitamin K prescribing habits for warfarin-treated patients at a teaching institution are adherent to CHEST guideline recommendations based on dose and route of administration. The efficacy of such dosages and routes will also be evaluated.

Methods: This retrospective chart review will be conducted by a pharmacist after obtaining a census of patients who received at least one dose of vitamin K between January 1, 2016 and September 1, 2016. The electronic medical record system will be used to identify such patients. The following data will be obtained from the charts: gender, age, indication for warfarin, type of bleed (if applicable), dose and route of vitamin K given, Kcentra or Fresh Frozen Plasma dose given (if applicable), INR before and after vitamin K dose, INR trend post-vitamin K, length of time it takes to achieve a therapeutic INR, and if warfarin was held/restarted. Patients who received vitamin K to reverse the INR for the purposes of a procedure will be excluded. The data will be collected and analyzed for the assessment of the use of vitamin K in this institution. The dosage and route of vitamin K will be correlated with the corresponding INR trend to determine its efficacy. The prescribed dose and route will also be compared to CHEST guideline dosing recommendations to assess adherence. The results will be presented to the hospital's Pharmacy and Therapeutics Committee for evaluation and optimization of vitamin K usage. These results will be combined with the results of other drug evaluations and will be submitted for IRB approval.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-352

Poster Title: Role of the pediatric cardiologist in medically clearing children prior to initiation of stimulant and antipsychotic medications

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Purpose: Reports of cardiovascular events in children receiving stimulant or antipsychotic medications resulted in the development of guidelines to minimize this risk. When initiating these medications, the pediatrician evaluates the child through history, physical exam, and current medications to evaluate the patient's risk. If there is concern, an electrocardiogram is typically performed, with a consideration for a cardiologist referral. A cardiologist may interpret the electrocardiogram readings differently according to risk factors and may recommend an intervention, subsequently allowing the patient to be medically cleared. Our study aims to determine the added value of the pediatric cardiologist in medically clearing these children.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. The study will include patients referred to the pediatric outpatient cardiology clinic. The list of children who had a cardiac evaluation prior to initiating stimulant medications for attention deficit and hyperactivity disorder (ADHD) or antipsychotic medications, will be obtained. Inclusion criteria are children less than 21 years who were referred to a pediatric cardiologist prior to placement on stimulant or antipsychotic medications. Neonates will be excluded from the study. The following data will be recorded: patient's age, weight, medical and social history, family history, vital signs (heart rate and blood pressure), medications (over-the-counter, herbal, and prescription), laboratory values, electrocardiogram (ECG), and other diagnostic tests, such as an echocardiogram. The cohort will be divided into two groups of children, those who were medically cleared to start taking these medications and those who were not. For patients who were not medically cleared, we will record the contraindication(s),

the plan established for the management of the patient, and the outcome of those interventions. Specifically, for both groups, we will evaluate any subsequent visits for cardiac-related symptoms or complications, patient admissions to the emergency department and/or our hospital due to cardiac events, as well as overall patient outcomes. A chi square test will be used to detect significant differences in outcomes between groups.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-353

Poster Title: Use of ramelteon for reduction of as needed antipsychotics in elderly patients with delirium

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Purpose: Delirium is an acute condition resulting in reduced attention and cognition, disorganized thinking, and altered level of consciousness with a fluctuating course. The first line therapy for delirium is behavioral modification. If that fails, antipsychotics have generally been used off-label for delirium although it has been linked with increased mortality in the elderly. Delirium has been associated with dysregulation of melatonin secretions and there is data suggesting the benefit of ramelteon, a melatonin agonist, in patients with delirium. The goal of this study is to evaluate the role of ramelteon in decreasing the need for as needed uses of antipsychotics.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. The study subjects were identified from May 2015 to October 2015. A standardized template is utilized for data collection of the control and intervention group. The study is limited to patients over 65 years of age, admitted to Winthrop University Hospital, and diagnosed with delirium. They have been referred to the Psychiatry Consultation and Liaison team to be placed on constant observation and received antipsychotics as needed for delirium. The control group consists of patients who have not received ramelteon and the intervention group will have patients who are given ramelteon. The total number of doses of antipsychotics given is recorded for each group and the number of doses of ramelteon is recorded in the intervention group. The name of the antipsychotic, the strength, and dose is also recorded.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Evaluative Study

Session-Board Number: 11-354

Poster Title: Evaluation of opioid induced constipation prevention in acute care patients

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Additional Author (s):
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Purpose: Opioid medications are widely utilized in the acute care hospital setting for moderate to severe pain management. Opioid induced constipation (OIC) is a problematic adverse effect seen in up to 15 percent of patients. Studies have indicated prevention is preferred over management of OIC. Prophylactic pharmacologic therapy may be beneficial for patients with predisposing factors such as advanced age, immobility, and coadministration of other constipation-inducing medications. The focus of this study is to assess if prophylactic laxative use prevented constipation.

Methods: The study is to be submitted to the Institutional Review Board for approval. This is a retrospective electronic chart review of patients receiving greater than 30 mg morphine daily or the equianalgesic equivalent for a minimum of five inpatient days. Exclusion criteria were patients younger than 18 years of age, diagnosis of cancer, gastroparesis, bowel obstruction, and irritable bowel syndrome. Primary outcome focused on the number of bowel movements seen in patients started on a prophylactic laxative at the initiation of pain management compared to those who did not receive a laxative for at least 3 days after initiating opioid pain management. Secondary outcome will evaluate patients requiring methylnaltrexone therapy. Additional data obtained from patient records include demographics, length of stay, pain rating, mobility status, and use of other constipating medication.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-355

Poster Title: Evaluation of pharmacist intervention using a data mining program on appropriate antibiotic de-escalation of gram negative cultures

Primary Author: Marinell Schoening, Hillcrest Medical Center, OK; **Email:** mkschoening@gmail.com

Additional Author (s):
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Purpose: Gram negative infections have been associated with multiple resistance mechanism which lead to poor patient outcomes and increased hospital cost. An important reason for decreased mortality includes inappropriate streamline to a more effective antibiotic choice towards the targeted organism than the initial antibiotic selected and delay in starting effective antimicrobial therapy. Overuse of broad-spectrum antibiotic therapy may also lead to increased antimicrobial resistance. The objective of this study is to determine whether pharmacist intervention using a data mining program “MedMined” could aid in improved monitoring and correction of inappropriate narrow-spectrum antibiotic selection.

Methods: This is a retrospective chart review and data analysis study of patients with cultures for gram negative bacteria. Adult patients will be identified through computer-generated, MedMined Surveillance Advisor alerts and reports of any positive blood cultures for gram negative bacteria. Pharmacists have the opportunity to review all cultures and perform chart reviews to determine whether appropriate antibiotic therapy is utilized and administered in a timely manner. The data gathered from electronic medical records system will be used to identify how often inappropriate treatment was recognized and intervened on by the hospital pharmacist. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 11-356

Poster Title: Four-Factor prothrombin complex concentrate outcome measures in patients receiving weight-based dosing versus fixed-dosing in a hospital setting with established guidelines for use

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Purpose: Four-Factor prothrombin complex concentrate (4FPCC) is labeled for urgent reversal of acquired coagulation factor deficiency, induced by vitamin-K antagonists, and off-label for oral anti-10a inhibitors. The health-system's formulary committee instituted a fixed-dose protocol for 4FPCC dosing adapted from recent literature. The purpose of this study is to evaluate the clinical effectiveness, safety, cost effectiveness, and degree of prescriber compliance, with the newly established 4FPCC fixed-dose protocol, within the affiliated health system, by comparing patients and outcomes before and after its implementation.

Methods: This retrospective study will be submitted to the Institutional Review Board for approval. All protected health information will be recorded without patient identifiers and maintained confidentially. This study will include adult patients within the affiliated health system who received only 4FPCC for urgent reversal of warfarin or an oral anti-10a inhibitor before and after implementation of the fixed dose protocol between June 1, 2013 to May 19, 2016 and May 20, 2016 to February 28, 2017 respectively. Data for population comparison will include: patient demographics, agents and indications for chronic oral anticoagulation, presence of other prescription or inpatient medications affecting hemostasis, laboratory values and blood component use before and after 4FPCC administration. Additional data will be collected to derive the measures for evaluation of fixed-dose protocol clinical effectiveness, safety, cost-effectiveness and compliance including: number of 4FPCC doses to reach international normalized ratio (INR) less than 2 for warfarin reversal, cumulative 4FPCC units administered, rates of thrombotic complications within seven days from 4FPCC administration, patient mortality, and patient discharge disposition.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-357

Poster Title: Pediatric delirium education: Comparing staff knowledge before and after a comprehensive education module in a pediatric intensive care unit

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Purpose: Increased awareness regarding the impact of pediatric delirium on patient outcomes has resulted in development of several validated screening tools for identifying and monitoring delirium in infants and children. This study will evaluate the degree to which educating pediatric intensive care unit staff impacts their knowledge on pediatric delirium.

Methods: A competency examination on pediatric delirium will be administered to hospital staff involved in the care of pediatric patients. This assessment will occur both prior to and upon completion of a comprehensive education module on pediatric delirium. Findings will be analyzed to assess the module's impact on competency scores, and results will be stratified by individual, profession, and overall group performance. Staff will also be asked to evaluate the efficacy of the education module and to offer suggestions for improvement.

Results: To follow.

Conclusion: To follow.

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-358

Poster Title: The standardization of admission and specialty order sets to minimize duplicate medication orders

Primary Author: Victoria Felder, Norman Regional Health System, OK; **Email:** victoria.n.felder@gmail.com

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Purpose: The implementation of computerized physician order entry has led to an increase in the number of duplicate orders. These duplicate orders can potentially lead to medication errors, specifically multiple administrations of the same medication. The purpose of this study is to find an effective way to minimize the number of duplicate medication orders, and thereby reduce the number of associated medication errors.

Methods: Commonly used medications, particularly as needed medications, will be identified and removed from standard admission and specialty order sets, then added to a specific as needed order set. Prior to changing the order sets, an analysis of the frequency of duplicate orders will be done, then after implementation of the new order sets, another analysis will be done to assess the change in frequency. Additional analysis will be done on the number and types of order sets impacted by the changes.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-359

Poster Title: Evaluation of the conversion from medication charge on dispensing to charge on administration in a community hospital

Primary Author: Robert Holliday, Norman Regional Health System, OK; **Email:** rholliday@nrh-ok.com

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Purpose: The pharmacy department of Norman Regional Health System currently generates a patient medication charge on dispensing, either directly from the pharmacy or from an automated dispensing cabinet. This creates a potential concern if the medication is not documented as administered or if there is a failure to credit unused medication. Such billing discrepancies can result in loss of revenue. By converting to a charge on administration process for medications, the heath system ensures greater accuracy in billing. The health system benefits from prevention of potential loss of reimbursements due to billing errors identified during insurance audits.

Methods: A complete list of all areas where medications are dispensed and charged will be assembled. This includes the automated dispensing cabinets, crash carts, totes, trays, outpatient infusion center, and the dialysis unit. Representative areas will be selected and an audit comparing charges versus administration will be performed to check for accuracy. A baseline will be established using the number of discrepancies. Based on the audit, a determination will be made as to the readiness of each unit and the organization as a whole for conversion to charge on administration. The assessment will include a financial analysis of revenue impact. Pharmacy will work with Health Information Technology to identify electronic medical record conversion steps for charge on administration. After completion of the assessment, a formal proposal will be made to the executive team.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-360

Poster Title: Evaluation of urinary tract infection (UTI) management in a community hospital with subsequent pathway development and implementation

Primary Author: Lauren May, Norman Regional Health System, OK; **Email:** laurenamay23@gmail.com

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Purpose: During a patient's workup in the hospital setting, positive urine cultures may be incidental discoveries of asymptomatic bacteriuria and not always necessitate antibiotic treatment. In recent years, exposure to unnecessary antibiotics has increased the development of antibiotic resistance. In light of this growing resistance, utilizing antibiotics in a responsible manner is of the highest priority. This study aims to evaluate current UTI-related practices, focusing on appropriate ordering, assessment, and treatment of urine cultures, with subsequent development and implementation of a UTI diagnosis and treatment pathway to decrease inappropriate urine culture ordering and streamline appropriate antibiotic treatment of true infection.

Methods: This study will utilize an observational, randomized electronic medical record review to gather data. The initial retrospective phase will consist of two months of data collection from a urine culture surveillance report dating from January to June 2016 with a goal of 150 subjects for final data analysis to provide evidence of current UTI-related practices and identify areas for improvement. Data that will be collected include: age, gender, admission date, nursing unit, symptoms warranting urine evaluation, urine collection method, dates and results of urine analysis and urine culture, diagnosis of UTI or suspected asymptomatic bacteriuria, antimicrobial start/stop dates and prescriber, and factors influencing treatment decisions including, other relevant microbial results, presence of sepsis and/or shock, history of recurrent UTIs, antibiotic allergies, and urinary catheterization. Patients who are pregnant and patients less than 18 years old will be excluded. The second phase of this study will consist of development and implementation of a UTI diagnosis and treatment pathway that will be presented to the Pharmacy & Therapeutics and the Medical Executive Committees for approval.

The final phase will consist of data collection in the same manner as phase one to assess the impact of pathway implementation on UTI management during the Spring of 2017. All patient data will be de-identified and kept confidential. This study has been granted expedited approval by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-361

Poster Title: Evaluation of empiric appropriateness of discharge antibiotic prescriptions from an academic medical center emergency department

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Purpose: Antimicrobial resistance is a growing problem that could be improved by implementing antibiotic stewardship activities into different practice settings. However, this has been a challenge for emergency departments due to the unclear diagnoses and the fast-paced environment. Pharmacists can have a significant impact with stewardship in emergency departments by aiding practitioners with empiric antibiotic selection and dosage. The objectives of this study are to evaluate the appropriateness of empiric antibiotic prescriptions written upon discharge for emergency department patients at an academic medical center and to describe medication errors found in the sample of antibiotic prescriptions.

Methods: This study has been approved by the OSU Center for Health Sciences Institutional Review Board. The study will use content analysis to evaluate a random sample of 500 empiric antibiotics that were submitted into the electronic medical record for discharged emergency department patients from July 1, 2015 to June 30, 2016. One clinical pharmacy resident and one emergency department medical resident will review the medication orders for errors following training in error identification, operational definitions, coding, and other information included in content analysis procedures. Open-ended data will be coded and viewed by an emergency department clinical pharmacist for agreement on coding categories. Coding for the final data set will be based on majority rule. The final data set will then be evaluated based on age of patient, provider type, antibiotic prescribed, antibiotic and dosage selected, indication for antibiotic, type or description of error, and appropriateness of antibiotic selected. Clinical practice guidelines and institutional antibiograms will be used to determine the

appropriateness of empiric antibiotic selection. Descriptive statistics will be used to address the study objectives.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-362

Poster Title: Assessment of inpatient antiretroviral stewardship at an academic medical center

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Purpose: As the population of patients with HIV grows, there is an increased need for monitoring of significant drug interactions and ensuring appropriateness of antiretroviral therapy upon initiation and maintenance in the inpatient setting. Therefore, the purpose of this study is to evaluate the need for pharmacist led antiretroviral stewardship in an inpatient setting. Specific aims include: identifying patients with HIV, determining the percent and type of errors that occur in a sample of antiretroviral regimens, and describing drug interactions between antiretroviral and other inpatient prescriptions.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have been prescribed antiretrovirals in the inpatient setting. The following data will be collected: patient sex, age, weight, height, serum creatinine, antiretroviral allergies, antiretroviral(s) selected, opportunistic infection medications, time medication was administered, admitting team/hospitalist group, inpatient medication list and home medication list. This data will be verified records from the patient's outpatient provider when available. The researchers will review each profile to assess appropriateness of antiretroviral regimens prescribed as well as any potential interactions with other inpatient prescriptions. All data will be recorded without patient identifiers and maintained confidentially.

Results: n/a

Conclusion: n/a

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 11-363

Poster Title: Comparison of time to absolute neutrophil count recovery in patients who received filgrastim or tbo-filgrastim

Primary Author: Nan Patterson, Saint Francis Hospital, OK; **Email:** nkpatterson@saintfrancis.com

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Purpose: Febrile neutropenia is a serious side effect of myelosuppressive chemotherapy. Granulocyte colony stimulating factors are used to reduce the severity of neutropenia and incidence of neutropenic fever. Filgrastim has been frequently prescribed by physicians to decrease the incidence of infection, as manifested by febrile neutropenia, reduce the time to neutrophil recovery and the duration of fever, and reduce the duration of neutropenia and neutropenia-related clinical sequelae. Tbo-filgrastim is a competitor to filgrastim with a similar safety profile, but a reduced cost.

Methods: This study has been approved by the Institutional Review Board. A retrospective chart review will be performed on inpatient and outpatient adult subjects who have received at least one dose of filgrastim or tbo-filgrastim from January 1, 2015, to December 31, 2015. Subjects will be identified using charge data for filgrastim or tbo-filgrastim. Patients will be excluded from the study if they are stem cell donors, have unknown treatment history, or have non-oncology neutropenia. Qualifying patients will be divided in two groups: those who received filgrastim and those who received tbo-filgrastim. Data will be collected regarding inpatient or outpatient status, hematologic or solid organ cancer, disease status, chemotherapy regimen, number of chemotherapy days, number of granulocyte colony stimulating factor doses, highest granulocyte colony stimulating factor dose, absolute neutrophil count nadir, day of absolute neutrophil count nadir, and discharge status. Eligible patients will be randomized and placed into two arms of filgrastim or tbo-filgrastim with 100 patients in each arm. Each arm will have a distribution of 75% inpatients and 25% outpatients. Patients will be enrolled consecutively until accrual goals are achieved. Patients who meet the time period and granulocyte colony stimulating factor requirements will be reviewed further. Data will be

analyzed using descriptive statistics. Results will be used to quantify ANC recovery time and compare the efficacy of filgrastim and tbo-filgrastim.

Results: 0

Conclusion: 0

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-364

Poster Title: Evaluation of a pharmacist-led vancomycin dosing service in the management of obese versus non-obese patients

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Purpose: Vancomycin dosing in obese patients is an area which lacks clear guidance due to altered pharmacokinetics when compared with non-obese patients. Pharmacist-led protocols for vancomycin dosing have been associated with a higher percentage of patients being dosed optimally, as well as a lower incidence of nephrotoxicity. The primary objective of this study is to evaluate vancomycin trough levels obtained through a pharmacist-led dosing service, specifically the procurement of goal troughs in obese and non-obese patients.

Methods: This study has been approved by the Institutional Research Ethics Board. The electronic medical record will be used to identify 200 adult patients admitted to the hospital from January 1, 2015, through December 31, 2015, who received a minimum of 48 hours of intravenous vancomycin therapy dosed per the pharmacy dosing service, with at least 1 trough lab value obtained. The following data will be collected: vancomycin loading and maintenance doses, dosing frequency, adherence to the dosing protocol for initial dosing, number of changes made to the dosing regimen, time to first dose, trough level, appropriateness of trough-timing, patient age, weight, serum creatinine (SCr), blood urea nitrogen, concurrent nephrotoxic drug administration (aminoglycosides, amphotericin, piperacillin/tazobactam, carbapenems, cephalosporins, colistin, and NSAIDs), subsequent nephrotoxicity (SCr increase of 0.5 mg/dL or a 50% or greater increase from baseline), diagnoses of ascites or congestive heart failure, and intensive care unit admission during vancomycin therapy. Exclusion criteria will include patients receiving >1 dose of vancomycin outside of the pharmacy dosing service, patients receiving hemodialysis, pregnancy, patient weight < 45 kg, length of therapy < 48 hours, and patients with no vancomycin trough values. Data will be analyzed using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-365

Poster Title: Utilization of lockboxes for controlled medications to reduce drug diversion and prevent accidental overdose

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Purpose: Prescription drug abuse is a serious public health issue that affects every community. The most commonly abused medications are opioids and benzodiazepines. In Oklahoma, between 2007 and 2011, there were 2,535 death related to prescription drugs. Tulsa is ranked 18th out of all counties in the US for painkiller deaths. More than 68 percent of people age 12 and older obtain drugs from friends or relatives. This project is designed to assess the benefit of lockboxes in reducing Tulsa's prescription drug abuse problem. The goals are to reduce the potential for diversion and prevent accidental overdose by unauthorized users.

Methods: The study is pending approval by the Quality and Safety Executive Committee as a quality improvement project. Patients, who are 18 years or older and discharged with prescriptions for controlled medications, will be prospectively selected from September 2016 to February 2016. Patients selected for study inclusion will be surveyed and provided a lockbox for home use along with written and verbal counseling on proper storage and disposal of medications. Follow up via telephone will be scheduled at 3 months to determine the benefit of the lockboxes as well as any behavioral changes in disposal of medications. All data will be recorded without patient identifiers to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-366

Poster Title: Effects of meropenem restriction on antimicrobial resistance rates: A before and after study

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Purpose: Broad-spectrum antibiotics are often misused due to their wide range of coverage. Consequently, antimicrobial resistance to these agents has become more prevalent. Meropenem is an agent that has become overprescribed and subsequently has shown increased resistance patterns. In an attempt to improve resistance rates at a 550 bed tertiary care center in Tulsa, Oklahoma, meropenem will be restricted starting in October 2016 to use in patients with a history of or proven infection with an extended-spectrum beta-lactamase producing organism. This study will compare pre- and post- restriction susceptibility to meropenem to determine if an improvement in resistance patterns is evident.

Methods: This quality improvement project is pending approval by the Quality and Safety Executive Committee. Medication use data will be collected to identify patients who received meropenem from February 2016 through May 2017. Laboratory data will be analyzed to evaluate the susceptibility profile changes of Pseudomonas aeruginosa, Klebsiella pneumoniae, Acinetobacter baumanii, and Escherichia coli during the same time period. Data that will be collected and assessed include: patient's demographic information, length of hospital stay, laboratory values, meropenem and other antimicrobial use, organism(s) isolated, source of isolate, and susceptibility patterns. Data will be recorded without patient identifiers to maintain patient confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-367

Poster Title: Bridging the Vaccination Knowledge Gap with an Educational Game to Increase Administration Rates in Adults, 50 years and older

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Purpose: In the last few years, the United States has faced outbreaks of whooping cough in our infant population, increased occurrences and hospitalizations from shingles, and rising numbers of deaths from Streptococcus pneumonia. Many people realize that vaccinations are important for children; however, barriers inhibit adults from receiving their vaccinations. The objectives of this study are: 1) identify baseline knowledge and willingness to be vaccinated with Tdap (Tetanus, Diphtheria, acellular Pertussis), Prevnar 13, Pneumovax 23, and Zostavax; 2) analyze feedback on an educational game as a teaching tool; and 3) compare vaccination rate data to prior year, in adults 50+ years.

Methods: Approximately 50-75 adults 50 years and older will be recruited upon visiting the community pharmacy, picking up their prescriptions, and through informational signs. If recruitment is low at the primary site, then a secondary community pharmacy site nearby will be selected. This study will follow the Centers for Disease Control and Prevention and Advisory Committee on Immunization Practices guidelines. Patients who meet the study age requirement, with no exclusion criteria, will be asked to sign an informed consent form and participate in a pre-educational session survey assessing demographics, baseline knowledge, and willingness to receive vaccines. The educational session, lasting 15-30 minutes, involves a laptop-based, Jeopardy-style learning game. The session will cover Tdap, Prevnar 13, Pneumovax 23, and Zostavax. During the educational session, patients will be taught about these vaccine-preventable disease states, importance of adult vaccines, and herd immunity. After the educational session, patients will be given a post-education survey and administered any vaccines if interested. Participants with unknown vaccine history will be asked for permission to contact their physician and thus, may need to return at a later date to receive

vaccines. The study will last for a four-month period, with loyalty rewards points offered. The data will be analyzed with descriptive and quantitative statistics. The study will be submitted to the Institutional Review Board for approval.

Results: Research in Progress

Conclusion: Research in Progress

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 11-368

Poster Title: Implementation of strategies to reduce alert fatigue associated with electronic order entry in a children's hospital

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Purpose: Electronic Health Record (EHR) systems have become a ubiquitous part of virtually all hospital operations and processes. The primary goal of this study is to reduce the number of medication alerts that could lead to alert fatigue by improving alert quality without negatively impacting patient health and safety. Evaluation and analysis of alerts will drive system and/or education changes to ensure that the most frequent alerts are more meaningful to the end user. The secondary aims are to gauge perception of medication alert quality and quantity by ordering providers; and describe successful methods for implementation of changes to the alerts.

Methods: This study will be submitted to the Institutional Review Board for evaluation. The study will identify the most frequent medication alerts and associated overrides drawn from data extracted from medication alert system reports from the institution's EHR. Alerts and associated override rates within the medication warning types of dose, duplication medication order, and duplicate therapy alerts will be evaluated. Alerts that exceed 5% of the total within each warning class will be targeted for intervention assessment. If no category within a type meets the 5% threshold, medications will be aggregated and analyzed; any aggregate that exceeds a count of 50 will be included in the assessment.
The most frequent triggered alerts with high corresponding override rates will be reviewed in more detail to better understand the processes involved with the alert triggers. A small clinical group will discuss these identified alerts and make recommendations regarding which alerts can be safely modified or removed to decrease alert fatigue. Recommendations for changes to the EHR alert settings and overrides in a way that is impactful and clinically significant will be

implemented. Medication alert system data will be then be compared for the same month of two consecutive years before and after implementation.
A provider survey will also be conducted before and after implementation to evaluate differences in perceptions of the quality and quantity of the alerts.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-369

Poster Title: Daptomycin dosing in obese patients: Analysis of adjusted body weight versus actual body weight

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Purpose: FDA-approved daptomycin dosing is based on actual body weight (ABW) for all patients, despite limited information regarding appropriate dosing in the obese population. Pharmacokinetic studies suggest daptomycin area under the curve (AUC) is increased in obesity, while clearance and volume of distribution are reduced. Additionally, daptomycin use in obesity is associated with safety concerns, as elevations in creatinine phosphokinase (CPK) levels are associated with increasing doses which may lead to cessation of daptomycin therapy.
The purpose of this study is to compare clinical and safety outcomes in obese patients receiving daptomycin dosed by adjusted body weight (AdjBW) and ABW.

Methods: This retrospective study will evaluate daptomycin use in obese patients dosed with AdjBW (January 2014 – December 2015) versus a historical control (January 2012- December 2013) dosed using ABW. Inclusion criteria are: adult patients with a body mass index (BMI) greater than or equal to 30 kg/m2 who received daptomycin for at least 72 hours. Exclusion criteria are: daptomycin started prior to admission, infections with retained hardware, renal dysfunction, isolates not susceptible to daptomycin, or patients presenting with rhabdomyolysis. Demographics, concurrent medications, culture data, daptomycin indication, and daptomycin dose in mg/kg will be collected using a standard form. Safety data including baseline and serial CPK, patient-reported myopathy, and discontinuation of daptomycin secondary to adverse events will be collected. The primary outcome is clinical failure defined as: development of resistance or recurrent signs and symptoms of infection necessitating antibiotic modification. Secondary outcomes include microbiologic success defined as at least

one documented result of microbiologic eradication and no evidence of subsequent clinical failure. A combined safety endpoint including elevation in CPK, patient-reported myalgia, and rhabdomyolysis requiring discontinuation of daptomycin will also be evaluated. Baseline characteristics will be evaluated using descriptive statistics. Multivariate logistic regression will be used to determine differences among case and historical controls after adjusting for covariates in outcomes. Survival curves will be used to determine time to clinical success or failure.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 11-370

Poster Title: Determination of medication possession ratio for viral suppression in HIV-infected antiretroviral-naïve patients

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Purpose: Medication possession ratio (MPR) is an objective method to monitor adherence to antiretroviral therapy in HIV-infected patients. MPR thresholds associated with viral suppression have been identified in a mixed population of treatment-naïve and treatment-experienced patients at our institution. The purpose of this study is to refine MPR threshold estimates in an antiretroviral-naïve population.

Methods: A retrospective observational cohort study will be conducted of HIV-infected patients greater than18 years of age at a university affiliated outpatient infectious diseases clinic. Treatment-naïve individuals who have received antiretroviral therapy at the OU Health Sciences Center Infectious Diseases Institute for at least one year between January 2011 and December 2016 will be identified. Antiretroviral claims data for MPR determination will be obtained from the designated drug assistance program pharmacy. Real-time PCR HIV-1 RNA, CD4, and demographic data will be collected from electronic medical records. Composite MPR will be calculated for the full antiretroviral regimen. Viral load area-under-the curve (vAUC) will be quantified using WinNonLin pharmacokinetic software to assess continuous viral suppression over the study period. Linear regression will be used to examine existing relationships between refill adherence rates and different levels of HIV viremia and will be offset for the overall duration of patient follow-up and controlled for age, sex, race/ethnicity, antiretroviral regimen type, and MPR. A marginal effects analysis will be used to determine the predicted probability of viral suppression (defined as HIV-1 RNA < 50 copies/mL) and MPR. Analysis will be stratified

by antiretroviral regimen class to determine whether differences in specific thresholds exist. Institutional Review Board approval will be obtained prior to study initiation.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-371

Poster Title: Cystic fibrosis patient education – Is the CF center meeting patient and family needs?

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Purpose: Cystic fibrosis (CF) is a complex disease state affecting many organ systems throughout the body. Treatment of the disease requires complex medication regimens. The purpose of this quality improvement project is to assess the current provision of patient education to patients and families in a CF clinic as well as to identify patient attitudes related to provision of that information and when it should occur. In establishing our baseline provision of education as well as identifying topics important to patients and their families, a more streamlined system for providing that education can be created.

Methods: The current quality improvement project will incorporate a survey-based design. The questionnaire will include demographic items, knowledge-based questions, questions related to patient opinions regarding clinic provision of education and confidence regarding their knowledge, questions related to educational goals, and questions related to sources of information. The knowledge questions have been taken from a prior validated scale. After a short pilot period, self-administered questionnaires will be given to patients and parents/caregivers at a normal office visit. Patients above the age of 10 will be given the questionnaire in addition to their parents. For patients 10 years old or younger, only the parents will be given a questionnaire. The project will target patients at the Cystic Fibrosis Center in Tulsa, Oklahoma, where a team of multidisciplinary practitioners provide care for approximately 145 patients. It is anticipated that up to 120 patients and 140 parents may participate in the study. Patients will be excluded if their primary language is a language other than English, if they have a history of lung transplantation, or if they have a diagnosis of CF-

related metabolic syndrome (CFMS). Patients will also be excluded if they are acutely ill at the time of their clinic visit, such that they are not seeing all members of the clinic team and are likely to be admitted to the hospital.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-372

Poster Title: Clinical implications and prescriber attitudes regarding new FDA recommendations with metformin prescribing

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Purpose: Metformin is endorsed by the American Diabetes Association as first-line therapy for type 2 diabetes (T2DM) because of its preferred safety and effectiveness profile in patients with adequate renal function. The U.S. Food and Drug Administration (FDA) recently revised prescribing recommendations to reflect dosing according to estimated glomerular filtration rate (eGFR) rather than serum creatinine. This expanded first-line treatment eligibility to those with mild to moderate renal impairment. Therefore, this study proposes to: (1) identify patients eligible for metformin treatment who are not currently treated; and (2) assess provider knowledge, attitudes, and willingness to adopt the new guideline revision.

Methods: This is a historical chart review. An electronic medical record system will be used to identify diabetic patients, seen by providers at an academic outpatient clinic in Tulsa, Oklahoma, from January 1, 2014 to December 31, 2015. Patients eligible for review must have a diagnosis of T2DM and not currently taking metformin and have at least one measurement of serum creatinine during the observation period. The following additional measurements will be collected: date of birth, sex, ethnicity, serum creatinine, eGFR,and corresponding date that these laboratory values were measured. The dates of outpatient appointments, prior to and following receipt of laboratory results, as well as the total daily dose of metformin, prior to and following lab results, will also be collected. These measurements will be used to calculate the proportion of patients eligible for metformin treatment who are not currently treated within the provider network based on the new ADA guidelines concerning dose adjustment based on eGFR. To accomplish the second objective, a non-identifiable survey will be developed and

distributed to physicians and advanced practice providers within the provider network. Providers will be asked a series of questions regarding their knowledge of, attitudes toward, and willingness to adopt the new prescribing information for metformin issued by the FDA. This study is pending IRB approval.

Results: N/A

Conclusion: Results of this project will identify opportunities to optimize treatment for diabetes treatment by identifying care gaps and potential strategies for intervention that will be readily adopted by providers.

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 11-373

Poster Title: Dose optimization of amikacin in pre-term and term neonates through physiologically-based pharmacokinetic simulation

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Additional Author (s):
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Purpose: Dosing of amikacin in neonates remains a challenge due to the wide inter-individual variability of pharmacokinetics. Historically, providers from our institution utilized amikacin dosing recommended in NeoFax®; however, due to concerns for supratherapeutic peak concentrations our institution implemented a modified dosing regimen in 2014. The purpose of this study is to evaluate the modified-protocol dosing of amikacin utilizing a physiologically-based pharmacokinetic (PBPK) simulation, and to propose a revised dosing regimen for amikacin, if needed.

Methods: This pharmacokinetic (PK) simulation study will utilize the simulation software, Simcyp Pediatrics, to simulate a pre-term and term neonatal population. We will simulate 50 male and 50 female subjects per one week of post-natal age (PNA) starting at the gestational age (GA) of 23 weeks. The GA will range from 23 to 42 weeks with PNA up to 17 weeks (N equals 15,400). Population simulation will cease when both post-menstrual age (PMA) and PNA are greater than or equal to 40 weeks and 4 weeks, respectively. Previously published amikacin PK model and molecular characteristics, such as molecular weight, lipophilicity, and plasma fraction unbound, will be incorporated to the software. Then, we will simulate the PK profiles based on NeoFax and modified-protocol regimens. All subjects will subsequently be categorized into six subgroups (PMA less than or equal to 29 weeks with either PNA 0-7 days, 8-28 days, or greater than or equal to 29 days, PMA 30-34 weeks with either PNA 0-7 days or greater than or equal to 8 days, and PMA greater than or equal to 35 with any PNA). The primary objective of this study is to compare the goal peak concentration attainment rates between the NeoFax

dosing and the modified-dosing protocol. The secondary objective is to propose an optimized dosing regimen of amikacin for our institution.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 11-374

Poster Title: Use and level of satisfaction among Puerto Rican women with pharmacy compounded bioidentical hormone therapy: a cross-sectional study

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Jorge Reyes

Purpose: Menopause symptoms have a negative impact in women's health affecting significantly their quality of life. Hormone therapy (HT) has been traditionally used to treat hormonal deficit and alleviate menopause symptoms, however, concerns with their safety profile have limited its use. Bioidentical Hormone Replacement Therapy (BHRT) has emerged as an innovative approach to manage menopause related symptoms in lieu of HT. The purpose of this study is to assess the use, improvement of menopause related symptoms, and self – perceived level of satisfaction with pharmacist compounded BRHT among Puerto Rican women.

Methods: Study participants will be conveniently recruited at Santa Cruz Pharma Care, which is a community pharmacy in Puerto Rico that specializes in compounding services including BHRT. Inclusion criteria consist on menopausal women > 21 years old who are able to read, understand, and write Spanish. Men and menopausal women with cancer or immunosuppression will not be eligible to participate. Eligible patients will be oriented about the purpose of the study and the requisites for participating by the primary investigator while collecting their prescribed BHRT at the pharmacy. A 26-item questionnaire will serve as the data collection tool. Voluntary completion of the study questionnaire will account as the patient's consent to participate in the study. Once the survey is completed, the participant will deposit it in a sealed box available for this purpose. The final response rate will be calculated based on the number of questionnaires returned to the sealed box. Data analysis will include descriptive statistics and frequency distributions and will be analyzed using SPSS V.24. The study protocol and data collection tool is currently under review by the Institutional Review Board of Nova Southeastern University.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-375

Poster Title: Impact of pharmacist intervention on physician prescribing pattern of proton pump inhibitors in a community pharmacy in Puerto Rico

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Purpose: Proton pump inhibitors (PPIs) are one of the most prescribed medications in the US. Growing data suggest an inappropriate use of PPIs related to incorrect indication, frequency, drug interactions, and duration of treatment. Furthermore, long-term inappropriate use may lead to drug related problems such as osteoporosis and kidney disease. The purpose of this study is to describe PPI utilization at a community primary care clinic and the measure the impact of pharmacist intervention on physician PPIs prescribing patterns.

Methods: This is a prospective study designed to assess PPI utilization in two outpatient clinics, Policlínica Castañer in Adjuntas, P.R and Hospital General Castañer in Lares, Puerto Rico. The clinic pharmacy system will be used to retrospectively identify the number of patients using PPIs and the number of prescriptions for the past 6 months. Patients who received a prescription for a PPI between February 2016 and July 2016 will be included. A sample of 120 patients (20 from each month) will be randomly selected for review of the electronic health record to identify indication, drug interactions, and duration of therapy.
Patients without a chart in the electronic health record will be excluded. After identifying PPI prescribing patterns in both clinics, a pharmacist intervention will be implemented to educate physicians of the clinics on current PPI utilization and opportunities for improvement. The intervention will consist of pharmacist presentations to physicians, as well as follow-up email communications. Six months after the interventions are completed, PPI prescribing patterns will be re-assessed. The primary outcome of this study will be the difference in frequency of PPI prescriptions. The secondary outcomes will be the differences of quantity of drug interactions,

indications, and duration of therapy. Differences between the data will be analyzed using descriptive statistics. This study will be submitted to Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 11-376

Poster Title: Satisfaction with pharmacist-provided immunization services offered at independent community pharmacies in Puerto Rico

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Purpose: Pharmacists in Puerto Rico (PR) were given the authority to administer vaccines in 2010 and since that time, some community pharmacies in PR have integrated immunizations as part of their services. Satisfaction with pharmacist-provided immunization services has yet to be researched in PR. The assessment of satisfaction with immunization services may provide useful data for those currently providing these services, interested in providing them, or undecided of implementing them. The purpose of this study is to assess patient, physician, and pharmacy personnel satisfaction with immunization services offered at independent community pharmacies in PR.

Methods: A cross-sectional, questionnaire based study describing the satisfaction of patients, physicians, and pharmacy personnel with pharmacist-provided immunization services will be conducted in 5 community pharmacies. All participants must be at least 21 years of age to be considered for participation and will be enrolled based on convenience sampling. An information sheet will be provided to each participant prior to participation. For patients, a paper-based survey will be distributed following the administration of at least one immunization at an independent community pharmacy. Physicians, pharmacy technicians, pharmacists, pharmacy administrators and pharmacy clerks will be provided the questionnaire electronically or on paper. The survey will contain a four point Likert-type scale (strongly agree, agree, disagree and strongly disagree). Baseline characteristics of age, gender, city of residence, and type of health insurance (for patients only), will also be collected by the survey. All data will be collected without identifiers and maintained confidentially. Results will be analyzed through

descriptive statistics. The research project will be conducted following approval from the Institutional Review Board (IRB).

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 11-377

Poster Title: Development and implementation of a comprehensive heparin-induced thrombocytopenia protocol based on an evaluation of current management practices

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Additional Author (s):
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Purpose: The 2016 Joint Commission National Patient Safety Goals (NPSG) include reduction of the likelihood of patient harm associated with the use of anticoagulants. In accordance with this goal, the objective of this study is to evaluate the current management of heparin-induced thrombocytopenia (HIT) at a medium-sized community hospital and determine discrepancies between current and optimal management. Based on this analysis, areas for improvement in patient care and cost-savings will be identified, and a comprehensive HIT management protocol will be developed and implemented.

Methods: This study will be submitted to the Institutional Review Board (IRB) for approval. The electronic medical record (EMR) system will identify patients with a diagnosis code for HIT, a HIT screening test ordered, or a medication order for argatroban or fondaparinux. The following variables will be evaluated: calculation and documentation of 4Ts score, appropriate screening test(s) ordered with appropriate timing, discontinuation of heparin, discontinuation of oral anticoagulant (if applicable), initiation of appropriate alternative parenteral anticoagulant at appropriate dose, continuation or discontinuation of alternative parenteral anticoagulant based on screening test results, oral anticoagulant re-initiated appropriately (timing, duration, and overlap with parenteral anticoagulant), decision to re-challenge in patients with a history of HIT, incidence of thrombotic events, and incidence of major bleeding. Percentage of patients managed appropriately will be determined for measured variables, and potential cost-savings will be calculated based on discrepancies between current and appropriate management for relevant variables. Information will also be collected on the types of testing utilized hospital-wide for HIT screening, and feasibility and potential benefits of updates to testing methods will be assessed. HIT protocol development will be based on best practices identified in guidelines, previous studies, expert consensus documents, and input from a multidisciplinary committee at

the institution. The final protocol will undergo review by the pharmacy and therapeutics committee prior to implementation.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 11-378

Poster Title: Emergency department urinalysis orders resulting in antibiotic therapy for long term care facility patients with asymptomatic bacteriuria

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Purpose: Asymptomatic bacteriuria (ASB) is an immense source of unnecessary antibiotic prescribing. ASB accounts for approximately 70% of presumed urinary tract infections (UTIs) in long-term care facilities (LTCFs). The Rhode Island Department of Health and LTCF stewardship programs are prioritizing the reduction of urinalyses across continuums of care to help decrease inappropriate treatment of ASB; however, many LTCF patients sent to emergency departments (EDs) are sent back with antibiotics for ASB. The purpose of this study is to identify the number of urinalyses ordered in the ED resulting in antibiotic prescriptions for LTCF patients, before and after an educational intervention.

Methods: This retrospective chart review will be submitted to the Institutional Review Board for approval at a 359 bed community teaching hospital serving a large LTCF population and averaging approximately 200 ED visits per day. All patients discharged directly from the ED to a LTCF will be included for a 60 day period prior to an educational intervention and a 60 day period after the intervention (pre- and post-education groups). The educational intervention will include a panelist lecture with providers from the ED, inpatient and pharmacy departments, posters, and smaller peer-to-peer prescriber discussions. Data collection will include pertinent baseline characteristics, labs, vital signs, chief complaint, presence of an indwelling urinary catheter, presence of symptoms related to a possible urinary tract infection (symptoms will be classified as definite, vague or none), and whether or not a urinalysis was performed. Results of urinalyses, urine cultures and susceptibilities, and antibiotic treatment during the ED visit and/or prescribed at discharge will be collected if applicable. Provider documentation will be further reviewed for patients who had a urinalysis performed to determine appropriateness of testing and/or subsequent antibiotics. The primary outcome of this study is the percent of LTCF

patients with urinalyses performed in the ED in the pre- versus post-education groups. A secondary outcome will include the percent of LTCF patients receiving antibiotics for ASB in the pre- versus post-education groups.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Evaluative Study

Session-Board Number: 11-379

Poster Title: Evaluating inappropriate prescribing of proton pump inhibitors in a community hospital

Primary Author: Michelle Fishburn, South County Health, RI; **Email:** mfishburn10@my.uri.edu

Additional Author (s):

Purpose: Proton-pump inhibitors (PPI) are commonly prescribed in hospitalized patients for gastrointestinal ulcer prophylaxis. An association between inpatients prescribed PPIs and increased rates of Clostridium difficile infections (CDI) and hospital-acquired pneumonia (HAP) has been established. Inpatient prescribing of PPIs often lacks an indication and puts patients at an unnecessary risk for hospital-acquired infections (HAI), which prolong hospital stay, increase cost, and increase morbidity and mortality. The purpose of this study is to evaluate the appropriateness of PPIs prescribed inpatient, based on established clinical criteria, in order to highlight and direct more appropriate prescribing practices in the future at South County Hospital.

Methods: A retrospective chart review of all inpatients prescribed a PPI was completed over a 20-day period. Patient location (intensive care unit or medical/surgical floors), admitting diagnosis, and concurrent antibiotic administration were recorded. Medication reconciliation was completed on all patients to determine if the patient was prescribed the PPI as an outpatient. If the PPI was initiated inpatient, an extensive chart review was completed for each patient to determine if there was an acceptable indication. Acceptable indications, based on clinical studies and guidelines, included the following: gastroesophageal reflux disease, gastric and duodenal ulcers, Heliobacter pylori infection, long-term use of non-steroidal anti-inflammatory drugs, and stress ulcer prophylaxis for intensive care patients with at least one of the following: platelet count < 50,000 mm3, INR >1.5 (not on warfarin therapy), aPTT greater than 2 times the control, mechanical ventilation greater than 48 hours, history of gastrointestinal ulceration or bleeding within one year of admission, Glasgow Coma score less than or equal to 10, major burn to greater than 35% of body surface area, multiple traumas, transplantation, spinal cord failure, or two or more risk factors (sepsis, stay greater than one week, occult bleeding lasting at least six days, high-dose corticosteroids (250 mg/day of

hydrocortisone equivalents). Of those PPI prescriptions initiated inpatient, an evaluation of all discharge medications was completed to determine if the PPI was continued outpatient.

Results: A total of 155 patients admitted to the hospital within a 20-day period received a PPI during their admission. All units of the hospital were included. Of those 155 patients, 88 of them were taking a PPI at home prior to admission (56.77%). A total of 67 of 155 patients were initiated on a PPI while admitted (42.23%). Out of these 67 patients, 45 of them were also receiving antibiotics (67.16%). Out of the 67 patients that were started on a PPI while inpatient, only 9 of them (13.43%) had an appropriate indication for initiation, based on acceptable criteria determined prior to data collection. A total of 58 out of 67 patients did not have an appropriate indication for use (86.57%). Only 6 out of 67 patients continued the PPI after discharge.

Conclusion: For admitted patients, an overwhelming amount of PPI prescribing lacks an appropriate indication and puts the patient at unnecessary risk of hospital-acquired infections. Co-administration of PPIs with antibiotics is known to increase the risk of developing a hospital-acquired infection and poses a serious threat of complicating an admission. Proton-pump inhibitors must only be prescribed if the patient has a clinical presentation that meets an indication for acceptable use.

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 11-380

Poster Title: Implementation of a pharmacist managed vancomycin dosing and monitoring service in a small community hospital

Primary Author: Stephanie Tang, South County Health, RI; **Email:** stang@southcountyhealth.org

Additional Author (s):

Purpose: Current vancomycin dosing guidelines recommend dosing to trough serum concentrations to achieve therapeutic doses and monitor toxicity. In several recent studies, pharmacy-managed vancomycin dosing and monitoring services increased the percentage of patients who were dosed at a therapeutic range while decreasing nephrotoxic events and duration of therapy. A pharmacist managed vancomycin dosing and monitoring program was implemented to ensure appropriate antimicrobial use in a small community hospital. The purpose of this study is to compare appropriate dosing of vancomycin prior to and after initiation of a pharmacist managed vancomycin dosing and monitoring service.

Methods: This study will be submitted to the Institutional Review Board for approval. There will be two comparative groups, with a retrospective analysis performed by patient group prior to initiation of the pharmacist managed vancomycin service. This will consist of a random selection of patients between January 1, 2014 and March 31, 2014. A prospective analysis will be done on patients who have their vancomycin managed by pharmacy after implementation of the protocol that was initiated in September 2016. . Data collected to assess appropriateness of prescriber and pharmacy dosing, will include age, BMI, weight, ideal body weight, serum creatinine, creatinine clearance, vancomycin indication, vancomycin dosing regimen, initial vancomycin trough concentrations, and time to achieve trough concentrations of 15-20 mcg/mL were collected.. Orders sent with an additional “Pharmacy to manage vancomycin” order will be compared to those dosed by prescriber prior to implementation of the intervention for optimal dosing. Additionally, there will be continual analysis to assess prescriber usage of the service and the impact of a vancomycin dosing calculator that was embedded into the electronic medical record to assist in accurately calculating the loading dose if a pharmacist was not requested to provide management services.

Results: N/A

Conclusion: N/A

Submission Category:

Submission Type: Research-in-Progress

Session-Board Number: 11-381

Poster Title: Pharmacist Driven Medication Evaluation Pilot in Geriatric Patients on a General Medicine Unit

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Purpose: Geriatric patients have a seven times higher risk than younger adults to be hospitalized due to an adverse drug event. This is often due to a combination of more complex medication regimens, and age-related changes in pharmacokinetics and pharmacodynamics. Approximately 40-60% of our general medicine patient population is over the age of 65. The Screening Tool of Older Persons' potentially inappropriate Prescriptions (STOPP) and Screening Tool to Alert doctors to Right Treatment (START) criteria categorizes medications by disease state, recommends medications that should be stopped/avoided, and suggests alternative safer medication options if available. By using these tools, pharmacists can identify potentially inappropriate medications (PIMs) and recommend alternative options to the primary provider. It is likely that 12.5% of medications on admission are PIMs. The primary objective is to assess whether pharmacist's review of medications especially in geriatric patients influences appropriate use of medication upon discharge from general medicine unit.

Methods: This is a prospective, single-center, interventional, before and after study at a tertiary medical center. The study was exempt from the Brigham and Women's Institutional Review Board. Our inclusion criteria are all patients who are 65 years and older admitted to our general medicine floor with at least five or more medications. We will exclude patients who underwent medication reconciliation by a pharmacist in the emergency department or patients whose medication history cannot be obtained. Pharmacists will perform medication reconciliation, evaluate the appropriateness of therapy and communicate their recommendations to the medical team. The major outcome is the number of PIMs on admission compared to discharge.

This will be assessed using a 2-sample t-test calculator (alpha = 0.05 and 80% power). In order to detect a 50% decrease in PIM after pharmacist's intervention, we estimate that 120 patients will be needed. Minor outcomes include the percentage of accepted pharmacy interventions, most common PIM class identified and the type of pharmacy intervention taken by medical team We expect that the results of this study will validate the creation of a geriatric pharmacy consult group in our general medicine units.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-001

Poster Title: Reduced dosing strategy of four-factor prothrombin complex concentrate for the reversal of warfarin: An evaluation of efficacy

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Additional Author (s):
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Purpose: The package insert for four-factor prothrombin complex concentrate (4F-PCC) recommends a dosing algorithm based on International Normalized Ratio (INR) and weight for the reversal of warfarin. Previously published studies have demonstrated that a lower fixed dose of 4F-PCC is effective; however, the ideal dose of 4F-PCC has yet to be determined. Our institution implemented a lower dosing strategy, based upon a stratified pre-administration INR level and body weight. The purpose of this study is to evaluate the efficacy of our dosing strategy.

Methods: This retrospective chart review will include patients who were administered 4F-PCC between September 2014 and September 2016 for the reversal of warfarin anticoagulation. One hundred thirty seven patients have been identified from billing records. This study will have Institutional Review Board approval. Data collection will include: patient demographics, dose of 4F-PCC administered, indication for warfarin anticoagulation and reversal, administration of phytonadione with or without other blood products, as well as, baseline and resulting INR. The primary outcome is efficacy defined as a reduction in INR to a target of less than 1.5 for intracranial hemorrhage or neuraxial intervention, and less than 2 for all others. Subgroup analysis will be stratified by dose, INR and weight. Secondary outcomes include: death and adverse events (bleeding and thrombotic events) within thirty days of 4F-PCC administration.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-002

Poster Title: Time to antibiotics for pediatric patients presenting with febrile neutropenia

Primary Author: Erin Tibbetts, Eastern Maine Medical Center, ME; **Email:** etibbetts@emhs.org

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Purpose: Research has demonstrated the importance of prompt antibiotic administration in adult patients with sepsis and febrile neutropenia (FN). Current recommendations advocate for initiation of broad spectrum antibiotics with a goal of administration in less than 60 minutes from time of presentation. Recent research studying time to antibiotics in the pediatric population with FN have reached similar conclusions but also identified several barriers to achieving this goal. The purpose of this study is to evaluate time to antibiotics and outcomes in pediatric patients presenting with FN while also identifying the barriers to prompt administration.

Methods: This study will be submitted to the Institutional Review Board for approval and will be a retrospective chart review identifying patients admitted through the pediatric oncology clinic or direct from home with a diagnosis of febrile neutropenia. Fever will be defined as temperature greater than or equal to 38.3 degrees Celsius or greater than 38 degrees Celsius on two occasions at least 1 hour apart. Neutropenia will be defined as absolute neutrophil count (ANC) less than 500 cells/mm3 or expected to decrease to less than 500 cells/mm3 in the next 48 hours. The study will include patients less than or equal to 18 years of age presenting with fever and neutropenia. Patients will be excluded if the cause of FN was not related to an oncologic diagnosis. De-identified data will be collected including basic demographic data, ANC, qualifying temperature, diagnosis, time to bed assignment, level of care, selected antibiotics and source of infection. Potential barriers will be collected including day of week, time of day, time and priority of order, time to culture collection, time of antibiotic order placement, verification and administration, lidocaine/prilocaine cream (EMLA) use and availability of premade antibiotic. The primary outcome is time to antibiotic administration. Secondary outcomes are time to antibiotic discontinuation, time to discharge and percent of patients requiring intensive care.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-003

Poster Title: Cost-Effectiveness of Early Palliative Care Referral in Stage IV Lung Cancer Patients

Primary Author: Benjamin Landry, Eastern Maine Medical Center, ME; **Email:** brlandry@emhs.org

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Purpose: Palliative care consultation has been shown to improve quality of life, distress from symptoms, and mood in patients with advanced cancers. Outpatient consultations initiated earlier in disease progression have been associated with decreased utilization of acute healthcare services and improved end of life outcomes including lower chance of hospital death. While earlier consults have been shown to decrease healthcare utilization, a significant decrease in cost has not been demonstrated consistently. The purpose of this retrospective study is to determine whether earlier palliative care consultations in stage IV lung cancer patients are associated with a reduction in healthcare associated costs.

Methods: This single center retrospective cohort analysis will be submitted to the institutional review board and will be conducted using data from the electronic health record. The study will include 200 adult, stage IV lung cancer patients who were deceased prior to 2016. Patients will be stratified by whether they received a palliative care consult greater than 6 months from death, between 6 months and 1 month from death, 30 days or less from the date of death, or never received a consult. Demographic data points to be collected include gender, age, palliative care referral date, location of palliative care referral, code status at time of death, and date of stage IV lung cancer diagnosis. Quality associated data points include location of death, code status at time of death, and date from last chemotherapy administration. Cost associated data points include the number of palliative care visits, emergency room visits, inpatient days, intensive care unit days, and chemotherapy doses received. Average patient cost per visit and chemotherapy costs were compiled from the hospital accounting system and applied as standardized values to all patients. The primary outcome is the healthcare associated costs accrued from the time of initial stage IV cancer diagnosis to death.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-004

Poster Title: Gentamicin for neonatal sepsis: Is our empiric dosing protocol producing target gentamicin concentrations?

Primary Author: Monica Litsas, Maine Medical Center, ME; **Email:** mlitsas@mmc.org

Additional Author (s):
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Purpose: Guidelines from the American Academy of Pediatrics recommend ampicillin and an aminoglycoside to cover the most commonly isolated pathogens seen in early-onset neonatal sepsis; however, there is currently no dosing protocol supported by the American Academy of Pediatrics. The Neonatal Intensive Care Unit at Maine Medical Center adopted a standardized dosing protocol based on post-menstrual age (PMA). The objective of this study is to assess the Maine Medical Center neonatal sepsis gentamicin dosing protocol with regards to achieving goal peak and trough concentrations, and safety.

Methods: This study will be submitted to the Institutional Review Board for approval. EPIC reports will be utilized to identify all neonates who received gentamicin and had at least one trough and one peak concentration drawn between June 2015 and June 2016. Patients will be stratified into three groups based on the defined age groups in the current dosing protocol. The following data will be collected: medical record number, height, dosing weight, date of birth, gestational age, post-menstrual age, reason for being started on gentamicin, blood cultures and results, dose of gentamicin received, trough levels and timing of level, peak levels and timing of level, random levels and timing of level, if patient was on the hypothermia protocol, and patient's outcome. If available, measurements of renal function will be evaluated, as well as risk factors for the development of nephrotoxicity. Risk factors for all outcomes will be evaluated with chi square. We will be conducting two subgroup analyses; in one analysis we will assess the outcomes for the dosing regimen for neonates on the hypothermia protocol, while for the other analysis we will identify neonates who had a positive blood culture and describe their outcomes. Study data will be collected and de-identified using REDCap electronic data capture tools hosted at Tufts University School of Medicine.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-005

Poster Title: Pharmacist-managed inpatient dofetilide program: description and adherence rate post-root cause analysis

Primary Author: You Jung (Elena) Ko, Maine Medical Center, ME; **Email:** yko@mmc.org

Additional Author (s):
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Purpose: The purpose of this quality initiative is to describe the pharmacist-managed dofetilide protocol at Maine Medical Center and assess the institution's adherence rate before and after a sentinel event. Team members (nurses, providers and pharmacists) will benefit from analysis of our institutional experience, in order to identify areas of improvement in our care of these patients.

Methods: This quality project will be a retrospective chart review of dofetilide patients at Maine Medical Center from November 1, 2013 to October 31, 2015 before the sentinel event (Group A), and from January 1, 2016 to present after the sentinel event (Group B). Power analysis suggests that a sample size of 50 patients in each group will be adequate to detect a statistical difference in pre- and post-protocol adherence. Fifty patients in Group A will be included consecutively in reverse chronological order, starting from October 31, 2015. Adherence rate will be assessed by reviewing the electronic medical record. This quality initiative will assess adherence in the following categories:

1. Pharmacist note prior to each dose
2. Dose and interval chosen correctly per renal function
3. Presence or absence of conduction abnormality assessed, with appropriate QTc value cut-off chosen
4. Dofetilide drug-drug interactions assessed by pharmacists
5. Potassium and magnesium level assessed and if necessary, corrected before and/or during initiation
6. QTc measurement obtained and reviewed 2 hours after each dose
7. Appropriate dose adjustment per the most recent QTc result and presence of conduction abnormality
8. Documentation of patient education

Gender, length of stay, documentation of intentional non-adherence and all recorded adverse events will also be collected.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-006

Poster Title: Concordance of antibiotic prescribing with treatment guidelines for acute uncomplicated cystitis in southern Maine

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Purpose: The updated 2010 Infectious Diseases Society of America (IDSA) guidelines for acute uncomplicated cystitis recommend nitrofurantoin, sulfamethoxazole-trimethoprim, and fosfomycin as first-line agents, with fluoroquinolones as alternative options. However, inconsistencies in prescribing practices remain a challenge. The purpose of this project is to evaluate prescriber concordance with guideline-recommended antibiotics and duration of therapy. Additionally, this study will assess explanations for prescriber non-concordance, including consideration of allergy and medication intolerance history. Results from this study will help guide possible interventions to assist prescribers in selecting optimal antibiotic therapy and treatment duration for acute uncomplicated cystitis in the primary care setting.

Methods: This retrospective observational study defined prescriber concordance as selection of IDSA-recommended antibiotics and duration of therapy, including selection of alternative antibiotics due to contraindications (including allergies) to one or more first-line agents. Patients screened for eligibility include: female gender, age 18 years or older, and with history of office visits at four affiliated family medicine practices between July 1, 2015 and June 30, 2016. International Classification of Diseases, Tenth Revision (ICD-10) diagnosis codes of N30.0 (acute cystitis), N30.9 (unspecified cystitis), and N39.0 (urinary tract infection) were used to identify office visits of interest. The following data will be collected: age, race, comorbidities (e.g. diabetes), antibiotic prescribed, treatment duration, allergies, pertinent laboratory values at time of visit (e.g. serum creatinine, white blood cell count), insurance status, and presence of follow-up encounter. A survey will be distributed to primary care providers to evaluate the approach to treatment and prescribing tendencies. Descriptive statistics will be used to examine baseline characteristics, antibiotic selection, and treatment duration. Rate of concordance and prescribing trends will be analyzed with a chi-square test. The use of

multivariate logistic regression will evaluate effects of independent variables on prescribing practices. All study data will be analyzed with Microsoft Excel and SPSS. This study has been exempt by the Maine Medical Center Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Evaluative Study

Session-Board Number: 12-007

Poster Title: Incidence of heparin resistance in patients diagnosed with heparin-induced thrombocytopenia

Primary Author: Stefanie DiLoreto, Maine Medical Center, ME; **Email:** sdiloreto@mmc.org

Additional Author (s):
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Purpose: Heparin-induced thrombocytopenia (HIT) is a rare, but serious adverse reaction of heparin therapy that may lead to additional thromboembolic complications. Previous case studies have identified a correlation between increased heparin requirements, or heparin resistance, and the occurrence of HIT. We hope to investigate a cohort of patients with confirmed HIT (cases) in comparison with a cohort of patients with suspected HIT and negative laboratory testing (controls) to determine if heparin resistance is associated with HIT using contemporary definitions and heparin dosing strategies.

Methods: The populations include those diagnosed with HIT at MMC between January 1, 2013 and June 30, 2016. Patients with intermediate or high clinical suspicion by 4 T's score and positive anti-heparin/PF4 antibody with optical density 0.4 or greater or positive serotonin release assay with 20 percent or greater platelet reactivity will be included in the confirmed HIT cohort. These cases will be compared to a cohort of patients with suspected HIT per 4T's score and negative laboratory testing. Patients will be excluded if they received heparin subcutaneously for venous thromboembolism (VTE) prophylaxis, low molecular weight heparin for VTE prophylaxis or treatment, or intraoperative heparin for procedures other than cardiac surgery. The primary outcome is the incidence of heparin resistance, defined as daily heparin requirements exceeding 35,000 units or an increase in daily heparin requirements of 25% or greater, in patients diagnosed with HIT compared to those without HIT. Secondary outcomes include the timing of increasing heparin requirements to presentation with thrombocytopenia, the timing of increasing heparin requirements in relation to presentation with thrombosis, intraoperative heparin requirements of HIT positive cardiac surgery patients, incidence of

heparin requirements greater than or equal to 25 units/kilogram/hour or increase in daily heparin requirements of 50 percent or greater, and the differences in the clinical presentation of HIT in patients who developed heparin resistance versus those who did not.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 12-008

Poster Title: Medication use evaluation of 4-Factor Prothrombin Complex Concentrate in patients on vitamin K antagonists following protocol implementation

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Additional Author (s):
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Purpose: Although reported bleeding rates are low, vitamin K antagonists are associated with hemorrhagic complications. Anticoagulation reversal is often necessary in patients requiring urgent surgical intervention or those presenting with a major life-threatening bleed. The use of 4-factor prothrombin complex concentrate (PCC4 , Kcentra®) for anticoagulation reversal may be beneficial in providing quicker reversal and in reducing the need for transfusions. Its use may attenuate the potential for transfusion-associated circulatory overload, acute lung injury, and anaphylactic-type reactions. In order to ensure appropriate use of Kcentra® on an institutional level, it is necessary to evaluate the effectiveness of the currently established protocol.

Methods: This is a single-center retrospective cohort study evaluating the appropriate use of 4-factor prothrombin complex concentrate comparing 17 patients pre-protocol to 60 patients following protocol implementation in May 2015 (n=78). The primary outcome was to evaluate the effectiveness of the current Kcentra® protocol for warfarin reversal. Secondary outcomes include evaluating the potential financial implications associated with inappropriate Kcentra® utilization at MaineGeneral Medical Center.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-009

Poster Title: Correlation between vancomycin dosing and therapeutic trough accuracy following implementation of institutional protocol

Primary Author: Danielle Dunn, MaineGeneral Medical Center, ME; **Email:** danielle.dunn@mainegeneral.org

Additional Author (s):
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Purpose: New vancomycin dosing algorithms for traditional (non-obese) and obese patients were implemented at the institution. The objective of this study was to evaluate if patients were able to achieve therapeutic trough goals sooner after treatment initiation.

Methods: In a single-centered, retrospective, cohort study, data was collected and evaluated from pharmacy-maintained vancomycin dosing/monitoring sheets including: patient age, gender, weight, creatinine clearance (CrCl), trough goal based on indication, loading dose, maintenance dose/interval, trough levels, and accuracy of protocol implementation. The traditional (non-obese) and obese dosing protocols were assessed separately. Patient data was excluded in the final analysis if the new protocol was not followed in its entirety. The primary endpoint assessed if the new protocol allowed patients to reach goal quicker based on loading and maintenance phase trough levels.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-010

Poster Title: Implementation of a pediatric antimicrobial stewardship in a primary care setting

Primary Author: Meagan Rusby, Penobscot Community Health Care, ME; **Email:** mrusby@pchc.com

Additional Author (s):
Anthony Casapao

Purpose: Antibiotics are the most common class of drugs to cause adverse drug events (ADEs) in children, resulting in 7 out of the top 15 drugs that often lead to pediatric ADE-related emergency department visits. Currently, there is abundant data in the literature regarding the effectiveness and importance of inpatient antimicrobial stewardship programs, but there is limited data on outpatient antimicrobial stewardship programs. Performing this study in Penobscot Community Health Care (PCHC), a federally qualified health center, allows for the assessment of efficacy and feasibility of an outpatient antimicrobial stewardship program in the primary care setting.

Methods: This is a retrospective observational descriptive study design that consisted of 2 years of data, June 2014 to June 2016, and includes patients less than 18 years of age with a diagnosis of acute sinusitis, chronic sinusitis, otitis media (suppurative or non-suppurative), pharyngitis, acute bronchitis or bronchiolitis, pneumonia (viral or non-viral), acute nasopharyngitis, influenza, or urinary tract infection identified by diagnosis using ICD-9 and ICD-10 codes. Patients were excluded if they had been previously diagnosed with an antimicrobial-associated infection (i.e. Clostridum difficle) within the year prior to visit date. Clinical decision support and education was developed and provided to the clinical providers at PCHC's pediatrics and walk-in clinics. The primary outcome is a composite definition of inappropriate use of antimicrobials per current guidelines defined as unnecessary administration of an antibiotic, incorrect dosing, incorrect duration of prescribed therapy, or incorrect coverage of infection. Secondary outcomes will include hospital admissions within 30 days post visit, a return visit to PCHC clinic for same diagnosis within 90 days post visit, and microbiological culture and susceptibility.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 12-011

Poster Title: Evaluating the impact of the new opioid dose limits mandated by the state of Maine on provider-specific treatment plans for pain management

Primary Author: Shilpa Nair, Penobscot Community Health Care, ME; **Email:** snair@pchc.com

Additional Author (s):
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Purpose: In 2015 Maine reported 272 deaths attributed to drug overdose, 57 percent of which involved opioids. In response to this growing epidemic, a bill was signed into law (Chapter 488,) limiting opioid prescriptions from exceeding an aggregate of 100 morphine milligram equivalents (MMEs) daily. Patients receiving prescriptions in excess of 100 MMEs were given time to taper to meet this requirement. This study aims to identify prescription opioids exceeding 100 MMEs, and to track their respective taper schedules to assess compliance with the law and its impact on patient outcomes.

Methods: This study was submitted to an internal clinical review committee for approval. The electronic medical record within a Federally Qualified Health Center was utilized to identify patients who had been prescribed opioids between May 2016 and August 2016, excluding patients in hospice care, an exception status per Chapter 488. The following prescription information was collected: drug, strength, directions, date written and responsible provider. Aggregate daily MMEs were calculated per patient and categorized as below 100 MMEs, between 100 and 299 MMEs, and 300 MMEs or above. Providers and clinical coordinators were alerted as to which of their patients fell into these designated categories and their recommended taper schedules to achieve compliance with the law. Providers also received a summary of the law, appropriate alternatives to opioids for optimal pain management, and patient education handouts about the law and opioid medications. The implementation of taper schedules will be assessed in order to gauge compliance with the law by January 1, 2017. The reviewers will classify each patient's care as compliant with Chapter 488, noncompliant

with Chapter 488, or an appropriate exception as defined in Chapter 488. Premature death rates will be collected in order to evaluate the impact of the law on patient outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-012

Poster Title: Implementation of a hepatitis C virus screening process and treatment protocol to provide affordable access to care and identify barriers to treatment

Primary Author: Kathryn Cunniff, Penobscot Community Health Care, ME; **Email:** kcunniff@pchc.com

Additional Author (s):
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Purpose: According to the American Association for the Study of Liver Diseases, there are an estimated three to four million people in the United States infected with HCV. New drugs are expanding treatment options. Without a protocol in place 280 cases were documented in the electronic medical record with primary care based treatment initiation for 6 patients in the past year. Implementing a screening process and treatment protocol will create increased access to care. Providing treatment in the primary care setting will reduce the risk of hepatocellular carcinoma, all-cause mortality, and provide a public health benefit to reduce rates of transmission.

Methods: All at risk patients over the age of 18 presenting to primary care providers will be offered a hepatitis C virus (HCV) screening test. Patients will first be tested for the HCV antibody. Patients with a positive HCV antibody test will be referred for a HCV ribonucleic acid (RNA) supplemental test to determine if an active viral load is present. An RNA positive test means an active HCV infection is present. All patients testing positive for HVC will be referred to pharmacy for insurance coverage verification and determination of further testing requirements pre-treatment. A referral to an infectious disease specialist participating in collaborative practice will be done to determine the appropriate treatment regimen. Patients testing positive will receive vaccination against hepatitis A and B if indicated. For patients with cirrhosis a pneumococcal vaccine will be recommended. Patient education and interventions by the pharmacist will be aimed at reducing progression of liver disease and preventing transmission.

Once a treatment regimen is established, patients will begin therapy and pharmacy will track the patient's progress and provide medication education and information. The number of identified cases, the number of patients who receive treatment, and the number of patients who reach a sustained virologic response will be measured during the course of this study.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 12-013

Poster Title: Impact of pharmacy-filled medication box service on adherence rates and prescription refill volumes

Primary Author: Charles Gregor Derupe, Penobscot Community Health Care, ME; **Email:** cderupe@pchc.com

Additional Author (s):

Purpose: The effects of non-adherence to medications account for 26% of hospital admissions and 20% of adverse drug events outside of a medical practice. Non-adherence also impacts the health system financially, as it limits the number of eligible scripts that are filled. This study will analyze the impact of pharmacy-filled medication box services on medication adherence rates for high-risk patients and on pharmacy revenue through enhanced refill rates.

Methods: Patients are recruited through a referral process from providers and care managers who identify high-risk patients for medication non-adherence. Upon referral, the pharmacy will obtain consent to dispense the referred patient's medications in a weekly pill box, organizing medications administered in the morning, noon, and in the evening. Pill boxes will be filled by either a pharmacy technician or a pharmacist with a final quality assurance check by a pharmacist. To facilitate the filling process, the patient's medications will also be synced with the goal to dispense all of their medications on the same day. At each subsequent fill, the quantity of medications left in the pill box will be recorded to assess for medication adherence rates and identify opportunities to address medication adherence barriers.
Patients will be followed for 6 months from the initiation of their participation in the study. Comparison of fill rates and associated revenue will be performed. Documentation of increased pharmacy revenue resulting from new patients without prior medication fills at PCHC pharmacies will also be documented and analyzed.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 12-014

Poster Title: Pharmacist interventions to grow organizational prescription retention through provider and patient education.

Primary Author: Nicholas Michaud, Penobscot Community Health Care, ME; **Email:** nmichaud2@une.edu

Additional Author (s):
Chelsea Magee

Purpose: Our organization is a Federally Qualified Health Center with four in-house pharmacies, the pharmacies currently capture approximately 20% of all prescriptions written by the organizations providers. Additionally, 90% of prescriptions filled at our pharmacies are written by our providers. Given these numbers there is a significant opportunity to increase the prescription capture rate through internal marketing. This initiative focused on increasing internal prescription retention to support and grow the free services available to the community including prescription assistance, homeless shelter, and clinical pharmacy services.

Methods: This study included all patients at our organization who received an electronic prescription from one of our providers. The initial data collected includes pharmacy location where prescription was sent, patients preferred pharmacy as listed in the electronic medical record, pharmacy encounters, and revenue. After the interventions are implemented, the data will be reviewed to assess the impact of each intervention. Interventions will include targeted provider education and patient focused marketing of pharmacy services. Informing providers about the positive economic impact the pharmacy has on funding the organization's free services and the advantages to using an integrated pharmacy to patient safety. Patient education and advertising will inform patients of discount drug programs, increased safety, prescription assistance programs, and improved of access through the in house pharmacies. Each quarter, interventions falling under one of the two previous categories will be implemented with a subsequent evaluation of percentage of prescriptions retained as a primary end point. Secondary end points include, pharmacy encounters, revenue changes and service enhancements added.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-015

Poster Title: An Interdisciplinary approach to reducing hospital readmissions by performing a home visit post hospital discharge

Primary Author: Matthew Christie, Penobscot Community Health Care, ME; **Email:** mchristie@pchc.com

Additional Author (s):
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Purpose: Patients are often readmitted to the hospital within 30 days of discharge for treatment of the same condition for which they were originally admitted. This negatively impacts patients' overall health as well as the health care system due to its costly process. Many patients are discharged from the hospital with medication discrepancies/errors, no follow up appointment with PCP, and/or are not set up with necessary services. This organization has developed a program to mitigate many of these challenges and reduce unnecessary hospitalizations as well as costs to the health care system.

Methods: A pharmacist and a registered nurse visit homes of recently discharged from the hospital within 72 hours of discharge. The pharmacist performs a medication reconciliation at the patient's home, counsels the patient on their medications and special devices (inhalers, injections, etc). The nurse performs a physical assessment, connects them with needed services (home health, transportation, etc), and makes sure the patient has a follow up appointment with their PCP within 7 days of discharge. After the patient is seen, the nurse or pharmacist performs a follow up phone call 7 days after the initial home visit to assure all interventions/services have been provided to the patient. Each patient will be monitored for 2 months and will be tracked for hospital readmissions.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Descriptive Report

Session-Board Number: 12-016

Poster Title: Use of target specific oral anticoagulants in dental procedures

Primary Author: Irene Madrigal, Penobscot Community Health Center, ME; **Email:** okinawagirl@me.com

Additional Author (s):

Purpose: There currently are no evidence-based practice guidelines on how to manage dental patients on the target specific oral anticoagulants (TSOACs). These agents are becoming a popular choice because they don't require any monitoring, there are few drug interactions and they possess a predictable pharmacokinetic profile. There is a concern of thrombotic complications if these agents are abruptly discontinued. However, if the agents are continued there is a concern of prolonged bleeding during dental extractions or surgery. This study was undertaken to determine if the risk of discontinuing TSOACs outweigh the risk of bleeding.

Methods: A literature search of PubMed and Embase (January 1, 1988- May 31, 2016) was conducted to find studies of patients who are on TSOACs. Only English articles were searched. Dental procedures included the following: single or multiple dental extractions, single or multiple dental implants, bone grafting, dentoalveolar surgeries and osteotomies. Keywords included apixaban, rivaroxaban, edoxaban, dabigatran and anticoagulants. The Boolean operator "AND" was used to search for the following terms and was combined with the names of the TSOACs: oral surgical procedures, maxillofacial surgery, dental extraction and dental surgery. The search excluded articles pertaining to vitamin K antagonists, IV direct thrombin inhibitors and antiplatelet agents. A total of 52 articles were found pertaining to dental procedures and anticoagulants. Of these, 43 focused on dental procedures and TSOACS. This search revealed 3 case studies, 6 clinical prospective cohort studies and 2 retrospective cohort studies, 9 expert opinion articles, 14 review articles and 9 meta-analysis on the topic. The review articles discussed the pharmacology, pharmacokinetics, drug interactions, monitoring, and the side effect profile of the oral anticoagulants in dental patients.

Results: The strength of the literature was poor in that they did not consider all important outcomes and the conclusions were based on a small population of patients. Furthermore, the articles did not specify if any other medications were taken that might have interacted with the

TSOACs. The author recommendations varied. Some authors recommended to hold the TSOACs 24-48 hours prior to dental procedures depending on renal function, the complexity of the dental procedure or if the patient had comorbidities for increased bleeding. However, other authors recommended to continue with the TSOACs and to manage any localized bleeding with either tranexamic acid, aminocaproic acid, topical hemostatic agents or with mechanical compression. Expert opinions varied depending on whether the provider was a general dentist or a specialist such as an oral maxillofacial surgeon, endodontist or prosthodontist.

Conclusion: There are no evidence-based guidelines as to how to manage patients on TSOACs who will undergo dental procedures. However, most of the literature concluded that interruption of the TSOACs is unnecessary for patients undergoing routine procedures such as teeth extractions involving less than three teeth. These studies did not include patients who might have conditions that predispose them to bleeding, such as alcoholism, renal failure, liver failure, and hematologic disorders. In the absence of these risk factors, dental practitioners should continue TSOACs because the risk of death from thromboembolism is greater than the risk of bleeding.

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-017

Poster Title: Effectiveness of a medication synchronization program on proportion of days covered (PDC) scores and Medicare Part D medication-related adherence metrics

Primary Author: Brooke Cowles, University of New England College of Pharmacy/Martin's Point Health Care, ME; **Email:** bcowles@une.edu

Additional Author (s):
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Rose Mary Coyle
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Purpose: The Centers for Medicare and Medicaid Services as a part of their star ratings program evaluate medication adherence. Three of these medication-related adherence metrics apply to statins, renin angiotensin aldosterone system antagonists, and noninsulin diabetes medications. To aid in being compliant with these adherence metrics, community pharmacies are implementing medication synchronization programs. The objective of this study is to determine if proportion of days covered (PDC) scores improved after a patient was enrolled in a medication synchronization program, specifically if the scores of statins, renin angiotensin aldosterone system antagonists, and noninsulin diabetes medications will improve.

Methods: This observational, cohort study includes subjects who were members of a Medicare Advantage prescription drug plan and who participated in a medication synchronization program at the plan's preferred pharmacy. Patients will be identified by their proportion of days covered (PDC) score, if they were taking at least one of the three groups of medications analyzed by the Centers for Medicare and Medicaid Services, and had at least two fills after being enrolled in the medication synchronization program. Patients who were not enrolled in the program but met all other criteria will serve as the control group. An adherence report will be generated from the plan's claims data and will be retrospectively analyzed. Before analysis, data will be de-identified and each patient will have a random identifier. The primary endpoints for this study include the percentage change in the final PDC score from 2015 to 2016, the percentage change in PDC from quarter one and quarter two (January through June) 2016 prior to enrollment in the program to quarter three and quarter four (July through December) 2016 after enrollment in the program, and the percentage change of PDC from quarter one (January

through March) 2016 to quarter one 2017. In addition, associated medical costs will be evaluated before and during the intervention period. This study has been approved by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-018

Poster Title: Hospital preparedness for the new joint commission antimicrobial stewardship standard: a survey study

Primary Author: Mohammed Abdulwahhab, Ascension, MO; **Email:** mohammed.abdulwahhab@ascension.org

Additional Author (s):
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Purpose: Approximately 23,000 people die each year in the United States from infections. Antimicrobial stewardship can help prevent the development of multidrug-resistant organisms and reduce unnecessary drug use and costs. The Joint Commission (TJC) announced a new Medication Management (MM) standard for hospitals, critical access hospitals, and nursing care centers. Standard MM.09.01.01 addresses antimicrobial stewardship and becomes effective January 1, 2017. The purpose of this survey is to assess hospital preparedness for the new The Joint Commission antimicrobial stewardship program standard.

Methods: A MM.09.01.01 medication management standard compliance survey was developed by a multi-disciplinary team including pharmacy and infectious disease physician leaders. The survey creation utilized key elements from the new TJC antimicrobial stewardship medication management standard. The survey was created in the Zarca survey tool and sent to participants via an e-mail link. The survey was sent to all the antimicrobial stewardship pharmacists at Ascension Health and to directors of pharmacy at additional selected sites across the United States. The Ascension facility results will be compared to the non-Ascension facilities that participate in the survey. Results and descriptive statistics between the two groups will be reported following completion of data collection.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-019

Poster Title: Rasburicase utilization at an academic pediatric hospital

Primary Author: Stephanie Duehlmeyer, Children's Mercy Hospital, MO; **Email:** srduehlmeyer@cmh.edu

Additional Author (s):
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Purpose: The purpose of this study is to evaluate the adherence to the current Children's Mercy Hospital guideline for rasburicase use. Children's Mercy Inpatient Pharmacy spent approximately $27,000 on doses of rasburicase dispensed in the last year. Investigating and characterizing patients receiving rasburicase will allow for determination if the clinical practice guideline is being utilized. Adherence to the guideline will provide insight into future areas of cost reduction.

Methods: This study has been submitted and approved with the Institutional Review board. This is a retrospective chart review of patients who received rasburicase at Children's Mercy Hospital between July 1st, 2012 and July 30th, 2016. The following data will be collected: patient age (years), patient weight (kg), patient height (cm), patient gender, date/time of admission, date/time of discharge, nursing unit where drug was administered, medical service, diagnosis, documented allergies, findings (scans +/- physical exam) reflective of lymphadenopathy, organomegaly or abdominal/thoracic/mediastinal masses, rasburicase dose (mg), rasburicase administration date/time, rasburicase stop date/time, rasburicase order sentence and comments, rasburicase indication, allopurinol dose (mg), allopurinol administration date/time, allopurinol stop date/time, allopurinol route (IV or PO), concurrent medications (including pre-medications/fluids and medications to treat any adverse events), dialysis – yes or no, and the following lab values; serum uric acid, serum creatinine, serum phosphorus, white blood cell count, lactate dehydrogenase. The data will be analyzed using descriptive statistics (mean, median, and standard deviation) to characterize the information collected.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-020

Poster Title: Utilization of Nebulized Antibiotics at Children's Mercy Hospital

Primary Author: Alexander Milligan, Children's Mercy Hospital, MO; **Email:** apmilligan@cmh.edu

Additional Author (s):
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Purpose: Tobramycin and aztreonam are the only FDA indicated nebulized antimicrobials. Additionally, they are only approved in the cystic fibrosis (CF) patient population for eradication and chronic utilization, leading to increased off-label use of these agents and other antimicrobials. By characterizing the use of nebulized antimicrobials, we will be able to determine the patient populations associated with their use, the frequency of their use, and the associated indications of their use.

Methods: This study has been approved by the Institutional Review Board. A query of inpatient nebulized antibiotic orders will be performed to generate a list of potential candidates. The following data will be collected: patient age, gender, ethnicity, allergies, nebulized antibiotic name, order sentence and comments, and duration of therapy. A chart review will be performed to extract the following data: Pertinent past medical history, prescribing service, indication for nebulized antibiotic, concurrent systemic antibiotics, and documented adverse drug reactions to the prescribed nebulized antibiotic (e.g. bronchospasm, anaphylaxis). All data will be recorded without patient identifiers and maintained confidentially. Data will be analyzed to determine if a quality improvement plan is warranted at our institution.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Descriptive Report

Session-Board Number: 12-021

Poster Title: Establishment and effects of appropriate opioid use (AOU) guidelines in the emergency department

Primary Author: Kaitlin Krisik, Christian Hospital, MO; **Email:** kxk1224@bjc.org

Additional Author (s):
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Purpose: The national opioid epidemic has placed much emphasis on reducing opioid utilization. Christian Hospital currently has the busiest emergency department in the Saint Louis, Missouri area, but does not have opioid guidelines in place. The objective of this study is to establish Appropriate Opioid Use (AOU) guidelines, and to determine if implementation of the guidelines improves appropriate opioid prescribing in the emergency department.

Methods: The study will be submitted to the Institutional Review Board for approval. The electronic medical record will identify all patients who visited the emergency department from February 22 - April 7, 2016 and from February 22 - April 7, 2017. All patient charts within this timeframe will be reviewed for the study. The primary endpoints include the percentage of patients receiving opioid and non-opioid analgesics during their emergency department visit and the percentage of opioid and non-opioid prescriptions upon discharge from the emergency department. The secondary endpoints include the total cumulative dose of opioid in morphine milligram equivalents (MME) per emergency department visit, total daily dose of opioid in MME prescribed at discharge from the emergency department, and the percentage of each administrative route of opioid administration in the emergency department. The following data will be collected: age, gender, opioid (name, dose, route), cumulative MME during emergency department visit, use of non-opioid analgesics, type of pain, pain scale and severity, indication for analgesic, diagnosis, discharge analgesic prescription, MME, day supply and seven-day readmission rate. Data will be collected and stored in an encrypted Microsoft Excel spreadsheet. The data collection key will be destroyed once all data is collected, leaving only the master that will be untraceable back to the patient.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-022

Poster Title: Pharmacist-directed warfarin protocol dosing compared to practitioner warfarin dosing

Primary Author: Tiffany Kiehna, Christian Hospital, MO; **Email:** txk1226@bjc.org

Additional Author (s):

Purpose: Christian Hospital implemented a new pharmacist directed warfarin protocol service in February 2016. The objective of this study is to assess how successful the pharmacy department is compared to other practitioners at reaching and maintaining therapeutic International Normalized Ratios (INRs).

Methods: The study will be submitted to the Institutional Review Board for approval. The electronic medical record will identify patients who received warfarin prescribed by physicians and other practitioners from April, 1st 2015 to January 31st 2016 as well as patients who received warfarin from "pharmacy per protocol" from April 1st, 2016 to January 31st 2017. Patient charts will be reviewed to track the primary and secondary endpoints. The primary endpoints include days to reach therapeutic INR in new-start warfarin patients and patients out of INR goal range upon admission/pharmacy referral as well as days within therapeutic INR in new-start patients and patients previously on warfarin. The secondary endpoints include adverse events (thrombus or bleed), supratherapeutic INRs, and percentage of patients who did not receive a therapeutic INR during his or her hospital stay. The following data will be collected age, sex, ethnicity, first available weight, indication for warfarin therapy, dose of warfarin at home, INR on admission through discharge, bridge therapy utilized, prescribing clinician of pharmacy referral, adverse events, number of days on warfarin, vitamin K doses administered, fresh frozen plasma administered, INR upon discharge, possible interacting medications, discontinuation of dosing service by clinician, and first 6 days of new-start warfarin doses. All patient data will be kept electronically in an encrypted computer file and made untraceable to the patient.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-023

Poster Title: Impact of alvimopan on gastrointestinal recovery time following open ventral hernia repair procedures

Primary Author: Sara Wirth, CoxHealth, MO; **Email:** sara.wirth@coxhealth.com

Additional Author (s):
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Kris Jones
Chelsea Landgraf
Jason Pelletier

Purpose: Alvimopan, a peripherally-acting opioid antagonist, is FDA-approved to accelerate time to gastrointestinal recovery following surgeries that include partial bowel resection with primary anastomosis. Alvimopan has been shown to accelerate recovery of gastrointestinal function and reduce hospital length of stay in clinical trials for several types of abdominal surgeries, but data is limited in hernia repair procedures. The purpose of this study is to evaluate the impact of alvimopan on gastrointestinal recovery time, hospital length of stay, and associated hospital costs following open ventral hernia repair with component separation procedures in a community hospital.

Methods: This study will be submitted to the Institutional Review Board for approval. This retrospective cohort study will compare outcomes in adult patients who underwent open ventral hernia repair with component separation procedures and either received alvimopan (alvimopan group) or did not receive alvimopan (control group). Eligible patients will be identified from CoxHealth South surgery department records for patients with billing for open ventral hernia repair with component separation procedures. Data will be collected through retrospective chart review, including doses of alvimopan administered, time to first stool or flatus output following surgery, diet orders, ambulation orders, nasogastric tube placement or removal, hospital length of stay, associated hospital costs, perioperative opioid administration, patient age, gender, body mass index, and comorbidities. All data will be recorded without patient identifiers and maintained confidentially. Statistical analysis will compare mean time to return of bowel function, hospital length of stay, and associated hospital costs between the alvimopan and control groups.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 12-024

Poster Title: Pharmacist impact on information exchange and collaboration management of a clinic formulary system.

Primary Author: Margaret Ladlie, CoxHealth, MO; **Email:** margaret.ladlie@coxhealth.com

Additional Author (s):
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Cassie Heffern

Purpose: There is minimal guidance on assessing the impact of pharmacist intervention on the formulary management in an outpatient setting. The objective of this study is determine overall difference in drug spend of a high cost medication before and after pharmacist collaboration at a large multi-office outpatient clinic. Other secondary objectives include evaluating the difference in evidence-based prescribing habits, overall utilization of the selected high cost medication, and overall difference in quantity of high cost medication ordering before and after pharmacist collaboration on formulary management.

Methods: This study will be submitted to the local Human Research Protection Committee at CoxHealth. The top five highest cost medications purchased for the clinic will be reviewed for realistic opportunities for cost savings at the multi-office clinic. One medication will be selected to implement formulary management processes based on which has the greatest potential for cost savings and utilization of evidence-based medicine. Once finalized, these processes will be presented to the CoxHealth Evidence Based Medicine committee, which is equivalent to the outpatient therapeutics committee, to be approved. A standardization process will be established for approving the medication use through inventory and education measures. To review effectiveness of intervention, the selected medication use will be reviewed pre- and post- pharmacy intervention. Subjects will be identified by a running report of the high cost medication administered in the clinic for three months one year prior to intervention to avoid potential bias, as well as three months post intervention. Subject data pertinent to the objectives will be collected via electronic chart review. Financial information will be collected via the pharmacy department buying team.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-025

Poster Title: Evaluation of clinical pharmacist performed comprehensive medication reviews for members of a health-system based Medicare plan

Primary Author: Ashley Evans, CoxHealth, MO; **Email:** ashley.evans@coxhealth.com

Additional Author (s):
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Cassie Heffern
Karrie Derenski

Purpose: Medicare Advantage plans that provide prescription coverage are required to establish Medication Therapy Management programs. Health-system pharmacists working in primary care clinics are well positioned to impact a health-system based plan. The primary objective of this study is to assess and evaluate the impact of face-to-face comprehensive medication reviews performed by a pharmacist through tracking pharmacist interventions by category, acceptance rate, and cost savings or cost avoidance. The secondary objectives are to evaluate the change in patient proportion of days covered, prescription drug plan costs, and hospital admissions and emergency department or urgent care visits.

Methods: This study will be submitted to the institution Human Research Protection Committee for approval. Pharmacists will perform comprehensive medication reviews at primary care offices. Pharmacists will review patient medications, gather additional history, and provide medication-related education. Pharmacists will document relevant findings and recommendations in the electronic medical record. Primary care providers will be notified of recommendations via the electronic medical records and/or verbal follow-up. Pharmacists will record the types and acceptance rates for these recommendations. Cost savings or cost avoidance associated with those recommendations will be calculated. Investigators will use health plan prescription claims data to calculate proportion of days covered and medication costs before and after the intervention. Additionally, investigators will review the electronic medical record for hospital admissions and emergency department or urgent care visits before and after the intervention. Per patient changes in 90-day proportion of days covered, annualized medication costs, and 30 and 90-day hospital admissions and emergency department or urgent care visits will be analyzed using Student's t-test. Changes in the

proportion of patients with a proportion of days covered greater than or equal to 80%, with a hospital admission at 30 and 90-days, and with emergency department visit or urgent care visit at 30 and 90 days will be analyzed using chi-squared or Fisher's Exact test depending on event incidence.

Results: In progress.

Conclusion: In progress.

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-026

Poster Title: Effect of quetiapine on total ventilator time and intensive care unit length of stay in trauma patients

Primary Author: Lance Schneider, CoxHealth, MO; **Email:** ronald.schneider@coxhealth.com

Additional Author (s):
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Karrie Derenski
Chelsea Landgraf

Purpose: Quetiapine is used off-label for treatment of delirium and subsequent reduction of ventilator time and length of stay in intensive care unit (ICU) patients. Evidence remains weak in this population, but quetiapine's various mechanisms of action may make it an effective choice to improve these outcomes by decreasing agitation and use of benzodiazepines. The purpose of this study is to evaluate the effect of quetiapine on total ventilator time and intensive care unit length of stay in trauma patients. Secondary objectives include hospital length of stay, lorazepam equivalents use, dexmedetomidine use, and rescue therapy use with haloperidol and olanzapine.

Methods: This study is currently under review by the institutional review board. It will be a retrospective, cohort study on ICU trauma patients at a community hospital from August 1, 2014 to August 1, 2016. Trauma patients age 18 years and older admitted to the ICU for greater than 72 hours will be eligible for inclusion. Study group patients must also have received at least one dose of quetiapine. Patients who meet the requirements will be placed into one of four groups: received quetiapine and ventilated, received quetiapine and not ventilated, did not receive quetiapine and ventilated, and did not receive quetiapine and not ventilated. Patients with a history of irreversible cognitive dysfunction (e.g. dementia), antipsychotic or benzodiazepine treatment prior to admission, or treatment with a scheduled antipsychotic other than quetiapine during ICU stay will be excluded. Randomization of patients will be performed using a random number generator. Patient demographics, primary and secondary outcome measures will be collected for analysis. A statistical T-test will be performed for all outcome measures.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-027

Poster Title: Impact of admission pharmacy services on patient care transitions in a community hospital setting

Primary Author: Lauren Fox, CoxHealth, MO; **Email:** lauren.fox@coxhealth.com

Additional Author (s):
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Purpose: Admission services within a hospital consist of creating or updating a patient's home medication regimen and comparing it to the current medications started by the provider with the goals of avoiding inconsistencies and reducing adverse effects. Previous studies have shown the majority of medication errors are due to an inaccurate medication history. Additional studies have demonstrated a reduction in errors and improved outcomes with pharmacy involvement in this process. The objective of this study is to assess the impact of pharmacy-led admission medication history and reconciliation on patient care transitions in a community hospital setting on a medical-surgical unit.

Methods: This study will be submitted to the Institutional Review Board for approval. The hospital computer system will be used to identify patients that were seen by a clinical pharmacist performing medication histories and reconciliations on a specific medical-surgical unit of the hospital during a nine-month time frame. A chart review will be performed for each patient to obtain the following data: total number of home medications; number of medication history discrepancies sub classified as additions, removals or changes; total number of discrepancies per patient; number of recommendations made to providers and associated provider acceptance rate. Chart review will also be utilized to collect 30-day emergency department visits as well as 30-day and 90-day readmissions. Medication discrepancies will be evaluated for potential harm using the Institute for Safe Medication Practices' List of High-Alert Medications in Acute Care Settings. Readmission, emergency department rates and Hospital Consumer Assessment of Healthcare Providers and Systems scores will be compared to scores during the same time-frame one year prior to the study period when pharmacy services were

not implemented. Cost savings will be analyzed using the Medication at Transitions and Clinical Handoffs' Financial Model for Cost Savings equation. All data will be password protected and stored on restricted personal drives of the investigators.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-028

Poster Title: Appropriateness of antibiotic prescriptions in patients diagnosed with a urinary tract infection in an outpatient, non-clinic setting

Primary Author: Scott Wuebbels, CoxHealth, MO; **Email:** scott.wuebbels@coxhealth.com

Additional Author (s):
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Jason Pelletier

Purpose: The primary objective of this study is to evaluate the appropriateness of empiric antibiotics (drug, dose, and duration) in adult patients with a diagnosed community-acquired urinary tract infection discharged from a regional health system's emergency departments and urgent care facilities. The secondary objective of this study is to create an antibiogram(s) detailing local antibiotic sensitivity to common urinary pathogens.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients with ICD-9 diagnosis code 599.0 for urinary tract infection, who were prescribed antibiotics and discharged from a regional health system's emergency departments and urgent care facilities during the study period. The following data will be collected: patient age, gender, complicated vs uncomplicated urinary tract infection [as defined by male gender, age greater than 65 years old, indwelling catheter, diabetes, immunocompromised (such as HIV or chronic steroid use), antibiotic use within 1 month, renal failure], health conditions, signs and symptoms documented in the medical record (temperature greater than 100.4°F, pyuria, dysuria, flank pain, suprapubic heaviness), vital signs, serum creatinine, calculated creatinine clearance, white blood cell count, antibiotic(s) administered while in the emergency department or urgent care, antibiotic(s) prescribed by the provider (including drug, dose, frequency, and duration), location of emergency department or urgent care, allergies, and urine culture sensitivities. The reviewer will rate each antibiotic prescription as appropriate or inappropriate based on the 2010 Infectious Diseases Society of America Urinary Tract Infection guidelines and other related study recommendations. Culture

and sensitivity data from urine specimens submitted to Cox Microbiology department(s) from each emergency department or urgent care will be analyzed for the secondary objective.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-029

Poster Title: Effect of a Pharmacist Driven Inpatient Medication Therapy Management Protocol on Glycemic Control in the Critically Ill

Primary Author: Shelbie McCoy, CoxHealth, MO; **Email:** shelbie.mccoy@gmail.com

Additional Author (s):
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Jenni Catlin

Purpose: Hyper and hypoglycemia impact morbidity, mortality, and healthcare cost. Impaired healing, infection, coma, and death are potential negative outcomes of glucose imbalance. Tight blood glucose control is beneficial and creates an opportunity to improve quality of life. Medication Therapy Management (MTM) provides education, counseling, and improved medication adherence. Pharmacist led MTM programs provide continuity of care, cost savings, and revenue but minimal data exists in hospitalized patients. This study aims to assess the impact of a pharmacist driven MTM program on glycemic management in the critically ill.

Methods: The primary objective of this prospective observational single center study is to assess the impact of pharmacist intervention on time to goal blood glucose levels from the initial blood glucose > 180 mg/dl to achieving goal < 180 mg/dl and the time maintained at goal. Secondary objectives include the frequency of hyperglycemia, hypoglycemic events, and ICU length of stay when comparing pre and post protocol change. This study is under review by the Institutional Review Board. Medical records of patients who were admitted to Medical, Cardiac, Neurology, Trauma, and Step Down units and received MTM services will be reviewed. All patient information will be gathered using data charted during MTM services performed in the electronic medical record. Data will be collected on enrolled subjects after MTM services have been completed and the MTM consult discontinued for > 1 week. Patients included are > 18 years old, admitted > 48 hours and MTM services provided within 24 hours of consultation. Patients are excluded if MTM services were performed during a separate admission, death during admission or transition to comfort care occurs, primary admission due to diabetic keto acidosis or requiring intravenous insulin upon admission, or endocrinology consultation.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-030

Poster Title: Impact of pharmacist-provided comprehensive medication review (CMR) for patients receiving oral chemotherapy treatment

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Purpose: Patients receiving intravenous chemotherapy are monitored closely for adverse effects and efficacy of therapy, in addition to safeguarding adherence. For the oral chemotherapy patient, it is more difficult for physicians to monitor medication adherence and toxicity. Additionally, a lack of safety checks may lead to medication errors and decreased efficacy. Currently, CoxHealth Ferrell Duncan Clinic (FDC) Oncology does not utilize a pharmacist in the management of oral chemotherapy patients. The purpose of this study is to assess the impact of pharmacist-provided comprehensive medication reviews (CMR) on outcomes for patients receiving oral chemotherapy.

Methods: This study will be submitted to the Cox College/CoxHealth Human Research Protection Committee for approval. Patients will be identified by FDC Oncology providers on the basis of being on an oral chemotherapy regimen. After the patient consents to involvement in this study, the patient will be asked to complete a survey prior to the initial comprehensive medication review (CMR) in order to assess comprehension and comfortability with their oral chemotherapy regimen. Following survey completion, a CMR will be conducted for each patient entering the study. All CMR findings and interventions/recommendations will be communicated directly to the providers for review. Patients will be asked to complete a second survey following the conclusion of the study period or oral chemotherapy regimen, whichever occurs sooner. The following data will be collected: oral chemotherapy agent, type of cancer, number of drug interactions, dose adjustments, medications added or removed from patient's medication list, number of provider communications for interventions, and survey data. All data will be recorded without patient identifiers and maintained confidentially. Adverse event, medication adherence, and intervention acceptance rates will be calculated. Statistical analysis

will assess patient satisfaction, intervention type and acceptance rate of pharmacist interventions.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-031

Poster Title: Pharmacist education and post-discharge follow-up: Reducing 30-day readmission rates in post-myocardial infarction patients in a community hospital

Primary Author: Grant Florer, Mercy Hospital - Joplin, MO; **Email:** gflorer@gmail.com

Additional Author (s):

Purpose: Hospital readmissions contribute to increased patient morbidity and rising health care costs, and many hospitals are at risk for reduced payments due to excessive numbers of readmissions. The purpose of this study is to measure the impact that pharmacists can have on readmission rates for post-myocardial infarction (MI) patients in a 240 bed acute care, community-based hospital through medication reconciliation, inpatient education, and timely follow-up upon discharge.

Methods: This study will be submitted to the Institutional Review Board for approval or exemption. This will be a single-center prospective study in patients admitted to a community hospital for myocardial infarction. The electronic medical record will be used to determine baseline readmission rates, and all patients identified upon admission for or with a new diagnosis of MI (both STEMI and NSTEMI) during a six-month timeframe between November 2016 and May 2017 will be included. A pharmacist will provide education for all discharge medications for post-MI treatment recommended by the American College of Cardiology/American Heart Association, as well as comprehensive medication reconciliation upon admission or prior to discharge. The final component will include face-to-face (when feasible) or telephone follow-up within 72 hours of discharge to ensure the patient was able to pick up new medications. The primary outcome will be the number of readmissions for cardiovascular disease related co-morbidities in less than 30 days.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-032

Poster Title: Evaluation of initial dosing of unfractionated heparin in obese patients with venous thromboembolism or acute coronary syndromes

Primary Author: Brady Lewis, Mercy Hospital Joplin, MO; **Email:** bradywlewis@gmail.com

Additional Author (s):

Purpose: A 240 licensed-bed acute care hospital uses weight-based protocols to dose heparin in the treatment of active deep vein thrombosis, pulmonary embolism, and acute coronary syndromes. These protocols utilize maximum bolus dosing and infusion rates that may provide suboptimal time to therapeutic anticoagulation in obese patients. The purpose of this study is to evaluate if using these current dosing protocols in obese patients delays achieving therapeutic levels of anticoagulation compared to nonobese patients.

Methods: This study will be submitted to the Institutional Review Board for approval or exemption. The electronic medical record system will identify patients who had received heparin per the institutional treatment protocols. The following data will be collected: patient age, gender, anticoagulation therapy prior to admission, height and weight on admission, heparin bolus dose and infusion rates, and antifactor Xa heparin assay (anti-Xa HA) levels. Patients will be divided into a nonobese population and an obese population. A time-to-event analysis for achievement of therapeutic anti-Xa range will be assessed. Appropriate statistical analysis will be conducted. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A (research in progress)

Conclusion: N/A (research in progress)

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-033

Poster Title: Initiation of revised unfractionated heparin monitoring protocol with anti-factor Xa

Primary Author: Emily Endres, Mercy Hospital Springfield, MO; **Email:** emily.endres@mercy.net

Additional Author (s):
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Purpose: Unfractionated heparin (UFH) is frequently prescribed to treat patients diagnosed with deep vein thrombosis (DVT) or pulmonary embolism (PE). UFH is most commonly monitored by activated partial thromboplastin time (aPTT), which measures multiple factors of the intrinsic and common coagulation pathway. Anti-factor Xa, however, is a direct measure of UFH activity. This facility recently revised protocols to monitor UFH with anti-factor Xa levels. The primary purpose of this study is to determine if the new protocol impacted the time to therapeutic anticoagulation. Additional measures will include number of labs drawn, patient length of stay, and patient safety.

Methods: This study will be submitted to the institutional review board for approval. The facility electronic health record will be used to find all patients 18 years of age and older diagnosed with a DVT or PE who received heparin as initial treatment between July and October 2016 and were monitored with anti-factor Xa levels. These patients will be compared to those who were monitored with aPTT levels for an equal number of study days prior to July 2016, the date of this institution's protocol change. The following data will be confidentially collected and maintained for each patient: age, gender, primary diagnosis, indication for unfractionated heparin (DVT or PE), initial dose of heparin, time from drug initiation to first level drawn, type of level measured, time to therapeutic anticoagulation, number of monitoring labs drawn until therapeutic, presence of adverse events, length of stay from initiation of heparin, and number of pertinent labs drawn. Patient information will be recorded without patient identifiers. Chi-squared and descriptive statistics will be utilized to assess data collected. The results will be used to support a preferred monitoring parameter for UFH.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-034

Poster Title: Conventional versus facility protocol dosing of unfractionated heparin for thromboprophylaxis in patients >100 kg

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Purpose: Obese patients are two to three times more likely to develop a venous thromboembolism (VTE) than normal weight patients. When used for the treatment of VTE, unfractionated heparin (UFH) is dosed based on patient weight; however, when used prophylactically, the CHEST guidelines recommend the use of fixed doses. The primary objective of this study is to quantify the safety of conventional dosing of thromboprophylaxis of UFH versus a weight based protocol in patients >100 kg based on the presence of bleeding or bruising. Secondary purposes include determining differences in efficacy and safety profiles between various body mass index (BMI) categories.

Methods: Patients will be identified using the hospital electronic health record. Inclusion criteria will be any patient greater than 100 kg in weight who is at least 18 years of age and received UFH as initial chemical thromboprophylaxis. Study groups will include patients prior to and following the implementation of the facility dosing protocol. The following data will be collected for each patient: age, sex, weight, height, BMI, dose, hemoglobin, platelets, and signs of bleeding or bruising as noted in provider or nursing documentation. All data will be recorded without patient identifiers and maintained confidentially. Chi-squared and descriptive statistics will be used to analyze the data. This study has been granted an exemption from the institutional review board based on its retrospective nature.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-035

Poster Title: Optimal vancomycin dosing to achieve initial therapeutic steady-state trough levels in the neonatal population

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Purpose: A previous study conducted at this institution revealed the vancomycin dosing protocol achieved initial steady-state therapeutic vancomycin trough goals in 30 percent of neonates. As a result, the protocol was modified to increase this percentage. The primary purpose of this study is to validate the modified protocol by measuring the percent of therapeutic steady-state trough levels in neonates dosed per modified protocol compared to those dosed per initial protocol. Secondary outcomes include assessing contributing clinical cofactors in neonates with non-therapeutic troughs, microbiology to validate safe area under the curve to minimum inhibitory concentration, and incidence of vancomycin-induced acute renal failure.

Methods: This observational, single-center retrospective chart review will be conducted from the time frame of July 1, 2015 through September 30, 2016. This study will be submitted to the Institutional Review Board for approval. Inclusion criteria are patients admitted to the level III b neonatal intensive care unit who are less than 2 months postnatal age and received vancomycin with a steady-state trough level measured no earlier than prior to the fourth dose. Exclusion criteria include neonates not dosed per protocol at 12.5 mg per kg per dose every 8 or 12 hours based on postnatal age, subsequent trough levels in a single patient, inappropriately drawn trough levels, therapy started at another facility, neonates who were anuric, or neonates with cystic fibrosis. Chi square test will be used to analyze the primary outcome.

Results: To be determined

Conclusion: To be determined

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-036

Poster Title: Evaluation of apixaban for appropriate dosing, indication, and safety in a community hospital

Primary Author: Michelle Wang, Missouri Baptist Medical Center, MO; **Email:** mxw1231@bjc.org

Additional Author (s):
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Purpose: Apixaban, a direct factor Xa inhibitor, is approved by the Food and Drug Administration for prevention of stroke and systemic embolism in the setting of nonvalvular atrial fibrillation and treatment of venous thromboembolism. Apixaban's ease of use, wide range of indications, and compelling safety and efficacy data make it an attractive anticoagulant. Since its addition to hospital formulary, a large number of patients have received apixaban for various indications. The purpose of this study will be to characterize the use and evaluate the appropriateness of apixaban at a community hospital with regards to indication, dosing, and safety.

Methods: A retrospective chart review will be conducted evaluating patients receiving therapeutic doses of apixaban from January 1, 2013 to June 30, 2016. Data will be collected at a community hospital in Saint Louis, Missouri. Patients 18 years of age or older who received at least two treatment doses of apixaban, including patients treated for off-label indications, will be evaluated. Patients with subsequent admissions will be evaluated for each hospital stay. Patients will be excluded if weight or serum creatinine was not documented during the hospital admission being assessed. Patients receiving apixaban for venous thromboembolism prophylaxis as well as for secondary venous thromboembolism prevention will also be excluded. Characterization of prescribing patterns that will be evaluated include appropriate dose based on indication and patient demographics. Safety outcomes include composite incidences of major, clinically relevant, and minor bleeding.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-038

Poster Title: Evaluation of an inpatient sotalol initiation order-set within a large health-system

Primary Author: Stacy Cassat, Saint Luke's Hospital, MO; **Email:** scassat@saint-lukes.org

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Purpose: Package inserts (PIs) for sotalol products recommend initiating sotalol under heart rhythm monitoring and waiting at least three days between dose escalations. Our health-system created a standardized sotalol initiation order-set. It includes options for more rapid dose up-titration or higher initial dosing. To our knowledge, no studies have evaluated inpatient sotalol dosing protocols that differ from the recommendations of the PIs. The purpose of this project is to evaluate inpatient sotalol initiation within the health-system after the implementation of the order-set.

Methods: Data will be gathered through retrospective review of inpatient medical records for patients who were started on sotalol therapy in the health-system after the implementation of the Sotalol Initiation Order-set (January 2016 to March 2017). Inpatient records will be limited to those who were started on sotalol using the order-set. Inpatient records for those who were on sotalol prior to admission will not be included.
The primary objective is to evaluate the length of stay for inpatients initiated on sotalol. Secondary outcomes will include therapy discontinuation during protocol, adverse reactions (Torsade de Pointes, QTc prolongation, new ventricular tachycardia, bradycardia, hypotension) and protocol compliance.
Data collection forms will not contain Protected Health Information and will be kept confidentially. IRB approval or exemption will be obtained for this project.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-039

Poster Title: Evaluation of gentamicin dosing protocol in the neonatal intensive care unit

Primary Author: Abigail Mott, Saint Luke's Hospital, MO; **Email:** abigail.mott91@gmail.com

Additional Author (s):
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Purpose: Gentamicin is commonly used in the NICU. Various dosing strategies are available and based on gestational age, post-natal age, weight, post-menstrual age or a combination. Our health-system has used a dosing protocol that used weight categories to determine dosing and designed to achieve a trough below 2 mcg/mL. More recent literature recommends a trough below 1 mcg/mL. In January 2016, we modified the gentamicin protocol to reflect dosing provided in NeoFax. The purpose of this study is to compare how often target drug levels are achieved comparing our original neonatal gentamicin dosing protocol and the newly adopted empiric dosing strategy.

Methods: This study will be performed in a total of four NICUs, one level II, two level IIIa and one level IIIb NICU, all within our health-system. This study was approved by the Institutional Review Board as a quality improvement project. All patients admitted to the NICU during the study period who had both a gentamicin trough and peak plasma level drawn will be included in the study. Patients will be excluded if their levels were not obtained in timing with our guideline and could not be extrapolated using Sawchck-Zaske kinetics. Subjects will be identified in retrospective fashion using a reporting function in the electronic medical record. Demographics, gentamicin dosing specifics, culture results, lab results and clinical disposition will be collected through the electronic medical record. This study will look at target drug level attainment comparing our original gentamicin protocol to the new dosing protocol. The goal trough is below 1 mcg/mL and the goal peak is 5-12 mcg/mL, depending on the organism's reported minimum inhibitory concentration when known . Secondary endpoints include the incidence of nephrotoxicty, ototoxicity and clinical cure rate defined as microbial clearance in repeat cultures, stabilization of leukocytes, and/or provider’s assessment of infectious resolution.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-040

Poster Title: Fixed versus variable dosing of four factor prothrombin complex concentrate for the reversal of warfarin-related non-intracranial bleeding

Primary Author: Angelika Cyganska, Saint Luke's Hospital, MO; **Email:** acyganska@saint-lukes.org

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Purpose: Kcentra is a four factor prothrombin complex concentrate (4F-PCC) used for warfarin reversal in patients with acute major bleeding. The current FDA labeled variable dosing regimen is determined by patient weight and initial INR value. There have been studies assessing the safety and efficacy of fixed lower doses of prothrombin complex concentrate that have resulted in similar clinical outcomes as compared to the variable dosing regimen. After assessment of cost effectiveness and implementation of a fixed dose protocol, this study will analyze the safety and efficacy of fixed versus variable dosing regimens.

Methods: This study will be submitted to the Institutional Review Board for approval. A list will be obtained from the blood bank of patients who received four factor prothrombin complex concentrate over the course of three years. These patients will be used as the control group for the prospective study portion. This data will also be analyzed to assess the cost effectiveness of the implementation of a fixed dose protocol. Kcentra dispensing will be moved from the blood bank to the pharmacy starting January 1st. Data will be collected from the electronic medical record of patients meeting inclusion criteria after implementation of the fixed dose protocol. Patients will receive a fixed dose of either 1000 or 1500 units based on initial INR. An INR will be drawn thirty minutes after infusion and will determine whether a second dose of Kcentra will be given. Physicians will also assess clinical signs and symptoms of bleeding and use clinical judgment to determine the need for a second dose. As patients are treated with 4F-PCC, the primary investigator will look at chart data to obtain necessary information. Data will then be analyzed and compared to the control group for the primary and secondary endpoints. The primary endpoint is the proportion of patients reaching a post-infusion target INR of less than 2.0.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-041

Poster Title: Impact of an integrated approach to antimicrobial stewardship with rapid diagnostics in a multi-hospital health system

Primary Author: Shelby Shemanski, Saint Luke's Hospital, MO; **Email:** sshemanski@saint-lukes.org

Additional Author (s):
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Purpose: Antimicrobial overuse significantly burdens health care systems, accentuating the value of antimicrobial stewardship programs. In 2015, the Antimicrobial Stewardship Program (ASP) was launched at Saint Luke's Health System (SLHS) concurrently with two new rapid diagnostic microbiology technologies which dramatically decrease time from culture collection to pathogen identification (ID). The aim of this study is to determine if integrating ASP personnel with rapid ID technologies results in improved outcomes for patients who had positive blood cultures during their hospitalization.

Methods: The study was supported through the SLHS Innovation Center and was deemed exempt by the Investigational Review Board. Previously, microbiology staff would call positive blood culture results to the floor nurse, who then contacted the attending physician. A new process change was adopted in June 2016, which consists of microbiology staff communicating positive blood culture results to an ASP member or other SLHS pharmacist. The pharmacist is expected to interpret the results, analyze local antibiograms, assess patient-specific information and subsequently relay that information to the appropriate physician. The goal of this process change was to leverage the expertise of the ASP members or SLHS pharmacists to maximize outcomes for patients, streamline communication, and decrease unnecessary antimicrobial use. In addition, the process change minimizes nurse interruptions which allows them to devote more time to their patients. Process and outcome measures for patients after the start of this process will be compared to a pre-intervention group who had positive cultures between August-December in the years 2013 and 2014. Primary outcomes include time to appropriate

therapy and optimal antimicrobial therapy. Secondary outcomes are numerous, but focus on clinical, process, and fiscal impacts of the updated blood culture communication process.

Results: Data collection currently ongoing at time of abstract submission.

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-042

Poster Title:
Assessing albumin use in intradialytic patients

Primary Author: Blake Baumann, Saint Luke's Hospital, MO; **Email:** blakewbaumann@gmail.com

Additional Author (s):
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Purpose: Currently there are unclear indications and evidence for the appropriate use of albumin in intradialytic patients. The objective of this study is to evaluate the usage of albumin for intradialytic patients experiencing intradialytic hypotension (IDH) at Saint Luke's Hospital and identify areas for improvement for albumin utilization during dialysis.

Methods: This study will be submitted to the Institutional Review Board for approval. A literature search will be conducted for recommendations for treatment of intradialytic hypotension (IDH). This study is a retrospective observational analysis. A drug utilization report from an electronic medical record will be used to identify all doses of albumin administered during dialysis from 3/1/2016 to 9/1/2016 at Saint Luke's Hospital. The electronic medical record will be used to collect following data: percentage of patient dialysis sessions in which albumin was used, the percentage of dialysis sessions in which crystalloids were used, hemodynamic interventions used prior to giving albumin, mean dose of albumin used, mean systolic blood pressure and mean arterial pressure prior to albumin administration and the time from start of dialysis to albumin administration. All information gathered will maintain patient confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 12-043

Poster Title: Optimizing medication distribution through use of EHR medication messages

Primary Author: Michael Starling, Saint Luke's Hospital, MO; **Email:** mstarling22@gmail.com

Additional Author (s):
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Purpose: Pharmacy is frequently contacted for questions regarding medication dispensing and distribution of patient doses. The vast majority of patient doses are dispensed and distributed in accordance with pharmacy workflow. However, unanticipated difficulties do occur, resulting in unintended stock-outs of unit based automated dispensing cabinets and misplacement of delivered medications. This quality improvement project is designed to improve the medication use process.

Methods: Recently, Saint Luke's implemented "missing dose" medication messages within the electronic health record to enhance nursing communication to pharmacy regarding missing medications. This communication allows the pharmacy to prioritize these medication requests and distinguish them from medication refills which are sent via the "request dose" message, and also allows for aggregation of missing dose data to look for trends and investigate possible solutions. The purpose of this quality improvement project is to improve internal processes regarding pharmacy medication distribution at Saint Luke's Hospital. This project aims to improve pharmacy medication distribution by obtaining data generated by the use of these medication messages, analyzing trends, and making process improvements.
We will look to identify trends based on medication, hospital unit or period of day. We will then look to make changes based on identified trends and improve the medication use process, medication distribution workflow, and ultimately decrease the frequency of missing medications. Baseline data included will be the frequency of medication messages in the "missing medication" category. Collaboration with nursing unit managers is essential to promote proper use of the "missing medication" identifier on nursing units. Within this data we will stratify based on specific medication, hospital unit or period of day. Outcomes from this project will ideally improve pharmacy distribution practices and improve pharmacy-nursing collaboration.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-044

Poster Title: Utilizing an electronic health record to improve pneumococcal vaccination rates

Primary Author: Theresa Lockwood, Saint Luke's Hospital, MO; **Email:** tlockwood@saint-lukes.org

Additional Author (s):
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Purpose: The Centers for Disease Control and Prevention's Advisory Committee on Immunization Practices (ACIP) recommends vaccination of patients at risk for invasive pneumococcal disease. Indications for vaccination include age and certain underlying medical conditions. The purpose of this study is to improve pneumococcal vaccination rates.

Methods: A forcing function will be developed and integrated into the electronic health record that will alert the nurse that the patient has an active order for a pneumococcal vaccine that needs to be administered prior to discharge. Data collected from the electronic health record server will include: patient age, medication administration record (MAR) status, vaccine billing code, and reimbursement amount. Random sampling will be done to assess the current electronic screening algorithm that is being used. A chart review will be completed and pneumococcal vaccine orders will be classified as either appropriate or inappropriate depending on the patient's indication.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-045

Poster Title: Pharmacist interventions in the emergency department and associated medication error prevention and cost avoidance

Primary Author: Lynsee Lanners, Saint Luke's Hospital, MO; **Email:** llanners@saint-lukes.org

Additional Author (s):
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Lindsay Massey

Purpose: The role of an emergency department pharmacist is crucial in medication safety as pharmacists are known to optimize medication therapy. The primary objective of this project is to describe medication error prevention associated with pharmacist interventions in the emergency department, and the secondary objectives are to evaluate cost avoidance associated with each type of intervention and assess the number of interventions associated with pharmacist order review.

Methods: Pharmacist interventions will be documented in the electronic medical record, EPIC software, by using a customized intervention that will be designed for use by pharmacists only in the emergency department. The intervention (I-vent) has customizable fields for pharmacists to fill out relating to each intervention made. When a pharmacist makes an intervention the name of the I-vent will be Emergency Department and there will be an option to click on subtype and a list of categories will be available to choose from. Examples of subtypes include therapeutic recommendation, adverse drug event prevented, drug incompatibilities, medication error prevented, clarifying medication histories, formulary interchange, dosage adjustment, toxicology, clarifying allergy information, and drug-drug or drug-disease interactions. Based on the type of intervention made there will be a field of the I-vent for the pharmacist to put whether the intervention was accepted, and a value category to associate the cost avoided with each intervention. All data extracted from the I-vent will be recorded without patient identifiers. An I-vent report will be generated into an EXCEL spreadsheet. The data will be used to describe medication error prevention and evaluate cost avoidance associated with different types of I-vents documented by pharmacists in the emergency department.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-046

Poster Title: Evaluation of parenteral calcitonin in hypercalcemia treatment at a community hospital

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Purpose: Hypercalcemia is a laboratory abnormality that can present with renal, neurological, and cardiac symptoms. Common etiologies of hypercalcemia include malignancy and primary hyperparathyroidism. Aggressive hydration and bisphosphonate therapy are mainstays of hypercalcemia treatment. Calcitonin inhibits osteoclast resorption and can quickly lower serum calcium until the onset of bisphosphonate therapy. Calcitonin use should be reserved for patients experiencing symptomatic hypercalcemia and limited to 48 hours of treatment due to tachyphylaxis. The purpose of this medication use evaluation is to assess parenteral calcitonin use at a community hospital.

Methods: A retrospective, single center chart review was performed at a 266-bed community hospital. Using the electronic medical record, all patients who received at least one dose of parenteral calcitonin between the dates 01/01/13 and 08/01/16 were reviewed. No patients were excluded for any reason in this analysis. Patient demographics collected include age, weight, gender, hypercalcemia symptoms, serum corrected calcium, and creatinine clearance. Data collected pertaining to the use of calcitonin incudes indication, dose, duration, prescriber service, and use of other hypercalcemia treatments, such as intravenous hydration and bone modifying agents. The primary end point was the utilization of calcitonin for symptomatic hypercalcemia. Secondary endpoints include dose appropriateness and duration of calcitonin as well as calcitonin use in relation to other hypercalcemia treatment modalities. Descriptive statistics will be applied to analyze primary and secondary endpoints.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-047

Poster Title: Drug usage review for nonionic iodinated contrast media in cardiac catheterization procedures.

Primary Author: Jessica Brinkmeyer, Southeast Hospital, MO; **Email:** jkbrinkmeyer@gmail.com

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Purpose: Iodinated contrast agents (ICA) are used for opacification of vascular structures in cardiac catheterization procedures. There are two nonionic ICAs on formulary, Visipaque™ (iodixanol) and Omnipaque™ (iohexol). Iodixanol is costlier and utilized more often compared to iohexol. The purpose of this drug usage review is to apply a newly developed ICA screening questionnaire to patients that underwent a cardiac catheterization procedure where iodixanol was utilized, and to use the results to identify patients that could have safely and appropriately received iohexol. Comparative cost savings will be calculated to support implementation of screening questionnaire prior to ICA administration for cardiac catheterization.

Methods: Patients must have received iodixanol to be included in this retrospective drug usage review. Patients in whom the amount of contrast was not documented will be excluded. Data will be gathered from electronic medical records. The following data will be collected: patient age, gender, race, weight, height, dose and type of contrast, allergies, if patient received additional hydration, serum creatinine pre- and post- ICA, glomerular filtration rate, metformin use, history of asthma, multiple myeloma, diabetes mellitus, cardiovascular disease (angina, congestive heart failure, severe aortic stenosis, primary pulmonary hypertension, severe cardiomyopathy), and chronic kidney disease. No patient identifiers will be recorded on data collection sheet. Patient medical record number cross-reference list will be kept in a password protected excel document. Descriptive analysis will be performed to determine the primary outcome of the percentage of patients who could have received iohexol instead of iodixanol, and the associated cost savings. Secondary outcomes will use descriptive analysis to determine the average amount and cost of iodixanol used and wasted per procedure, and if an average amount of iohexol can be determined for various procedures.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-048

Poster Title: An evaluation of antibiotic administration time in febrile neutropenic patients

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Purpose: Over 80% of neutropenic patients with hematologic malignancies receiving chemotherapy will develop fever that can often be associated with infection. IDSA recommends urgent administration of an antipsuedomonal antibiotic in every febrile patient with neutropenia. SSM Health Saint Louis University Hospital's Institution Specific Protocol states that an antipseudomonal antibiotic should be initiated within 1 hour of fever spike in a neutropenic patient. The objective of our study is to conduct an institutional quality measure analysis of initial antipseudomonal antibiotic administration time in patients on the hematology or bone marrow transplant services who developed febrile neutropenia during their admission.

Methods: This study is a retrospective chart review of patients aged 18 years or older with hematologic malignancy or post blood marrow transplantation, an absolute neutrophil count (ANC) of less than 500 cells/mm3, and a fever greater than 38 degrees Celsius. Previous studies have been conducted to assess antibiotic administration in febrile neutropenic patients but were more inclusive of patients admitted through the emergency department or a clinic. This study will be excluding patients admitted through the emergency department or clinic, have a solid malignancy, or received an antibiotic escalation prior to fever. The primary outcome of this study is to assess adherence to institution specific protocol of initiating an antipsuedomonal antibiotic within 1 hour of fever spike. Secondary outcomes will include adherence to institutional specific protocol of obtaining cultures during the initial assessment, sources of the delay in initiation of an antipsuedomonal antibiotic, and death from infection during admission. Demographics on sex, age, malignancy, temperature, ANC, respiratory rate, pulse, blood pressure, and antibiotic ordered will be collected. Other data points on the number of cultures, death during admission, time of fever, cultures, antipsuedomonal antibiotic

administered, pharmacy verification timing, and the use of other antibiotic administrations will also be collected. This study will be submitted to the St. Louis University Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-049

Poster Title: Time is of the essence; evaluation of treatment courses when vancomycin is dosed every 18 hours.

Primary Author: Daphne Goewey, SSM Health St Mary's Hospital, MO; **Email:** daphne.goewey@ssmhealth.com

Additional Author (s):
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Krista Harry

Purpose: The purpose of this study is to examine the patient population that has required a dosing interval of every 18 hours to validate this dosing regimen and see if recommendations can be made for initiating a dosing interval of every 18 hours based on patient characteristics.

Methods: This study has already been submitted to and approved by the internal review board. The electronic medical record system will be used to identify adult patients who have received intravenous vancomycin administered every 18 hours. All adult patients between the ages of 18 and 89 who received a dose of intravenous vancomycin administered every 18 hours between August 1, 2013 and July 31, 2016 will be eligible for inclusion. Patients over the age of 89, those on hemodialysis, those who are pregnant, patients receiving continuous infusion vancomycin therapy, patients whose vancomycin troughs were not monitored, and subsequent visits of patients who were previously on q18 vancomycin dosing will be excluded. For the purposes of assessing primary and secondary outcomes the following patient data will be gathered: disease indication, gender, age, creatinine clearance, weight, race/ethnicity, vancomycin trough levels, number of vancomycin doses received, and milligrams of vancomycin in each dose. All data will be collected without patient identifiers and will remain confidential. Analysis will be conducted using descriptive statistics. The primary outcome will be number of patients subtherapeutic, therapeutic, and supratherapeutic after receiving q18 vancomycin dosing based on trough levels. Secondary outcomes will include: number of patients who were mildly (21-25), moderately (26-30), or severely (>30) supratherapeutic based on trough levels and toxicity associated with vancomycin use.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-050

Poster Title: Evaluation of an argatroban protocol regarding efficacy, safety, and appropriateness of use

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Purpose: Over one year ago, the SSM Health St. Louis Network implemented a new argatroban dosing protocol with the intention of improving safety and efficacy outcomes associated with argatroban use. The purpose of this retrospective chart review is to evaluate the use of argatroban at five hospitals within the SSM Health St. Louis Network in order to assess its efficacy, safety, and appropriateness of use.

Methods: IRB approval was obtained in September 2016. The electronic medical record system will be queried to identify all patients aged 18 or older within the five included hospitals who received argatroban between August 1, 2015 and July 31, 2016. All individuals with an aPTT goal within the protocol defined range will be included. The primary investigator will collect the following data from the patients' medical records: medical record number, age, diagnosis for argatroban use, baseline lab values (aPTT, PT, INR, AST, ALT, albumin, SCr, BMI), dosing nomogram used (standard for BMI less than 30, standard for BMI greater than or equal to 30, critical care/hepatic impairment), initial argatroban dose, time to goal aPTT, whether or not aPTT was supratherapeutic prior to goal, number of dose adjustments to attain goal aPTT, dose at goal, deviations from protocol, and adverse effects related to bleeding and thrombosis. Descriptive statistics will be utilized to analyze the data so they can be compared to safety and efficacy endpoints reported in primary literature. The primary efficacy endpoints will be time to goal aPTT and rate of new or extended thrombosis. The primary safety endpoint will be the rate of major bleeding as defined by the International Society on Thrombosis and Haemostasis. Compliance rates with the protocol, including appropriate nomogram selection and average number of deviations from protocol, will also be assessed.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-051

Poster Title: Evaluation of tranexamic acid in trauma patients receiving massive transfusion at an academic medical center

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Purpose: Trauma patients are at an increased risk of coagulopathy and hyperfibrinolysis, and approximately one third of trauma-related in-hospital deaths can be attributed to hemorrhage. Tranexamic acid has a proven mortality benefit in these patients, though it has not been specifically studied in patients requiring massive transfusion. Additionally, previous studies have not included thromboelastography as a measure of fibrinolysis to guide use of tranexamic acid. This study will attempt to evaluate the use, efficacy, and safety of tranexamic acid in patients requiring massive transfusion at an academic Level 1 trauma center.

Methods: This retrospective study has been submitted to the Institutional Review Board for approval. The primary outcome will be administration of tranexamic acid in massive transfusion according to the defined clinical parameters of the CRASH-2 trial: heart rate greater than 110 beats per minute or systolic blood pressure less than 90 mmHg. Additionally, thromboelastography will be included to measure fibrinolysis. The secondary outcomes will be mortality and adverse effects in patients receiving tranexamic acid versus those who did not. Patients aged 18-89 years old for whom massive transfusion protocol was activated from October 2013 through October 2016 will be included. Patients receiving tranexamic acid for indications other than trauma and those with preexisting clotting disorders will be excluded. A list of trauma patients for whom massive transfusion protocol was ordered will be obtained from hospital blood bank records, and will be separated into patients who received tranexamic acid versus those who did not. Data points collected will include patient demographic data (age, sex, prior anticoagulant or antiplatelet therapy), injury characterization (trauma type, incidence

of traumatic brain injury, Glasgow Coma Score, injury severity score, heart rate, systolic blood pressure, temperature, blood pH, LY30 value on thromboelastography), timing of tranexamic acid administration, incidence of various interventions (blood, fresh frozen plasma, cryoprecipitate, prothrombin complex concentrate, factor VII, surgical intervention, and patient outcomes (30 day mortality, vascular occlusive events).

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-052

Poster Title: Effect of inhaled epoprostenol on clinical outcomes for refractory hypoxemia in patients with acute respiratory distress syndrome

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Purpose: Acute respiratory distress syndrome (ARDS) is a life threatening lung injury that has been primarily managed by supportive interventions such as mechanical ventilation utilizing low tidal volume and prone position. Inhaled epoprostenol is a pulmonary vasodilator that has been proposed as a salvage therapy in patients with refractory hypoxemic ARDS. The current available studies with epoprostenol have focused on measuring surrogate outcomes such as improvement in oxygenation. The objective of this study is to determine if there is a difference in days of mechanical ventilation and other clinical outcomes in patients with ARDS receiving inhaled epoprostenol versus standard care.

Methods: A retrospective cohort study utilizing electronic medical record will be performed on patients with a diagnosis of ARDS utilizing inhaled epoprostenol or standard of care from October 2014 to August 2016. Patients between 18 to 89 years of age admitted to intensive care units who require mechanical ventilation with a PaO2/FiO2 150 mm Hg or lower and receive at least 4 hours of inhaled epoprostenol will be included. Patients who received any dose of inhaled nitric oxide or had documented intracranial hemorrhage will be excluded from this study. The primary outcome is mechanical ventilator-free days. Secondary outcomes include change in PaO2/FiO2 ratio, in-hospital mortality, ICU length of stay and rebound hypoxemia. This study will be submitted to the local Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-053

Poster Title: Influence of diastolic dysfunction on renal insufficiency in acute decompensated heart failure treated with intravenous loop diuretics

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Purpose: Approximately half of patients admitted with acute decompensated heart failure (ADHF) have heart failure with preserved ejection fraction (HFpEF). Dosing strategies of intravenous (IV) loop diuretics in ADHF were studied in patients with heart failure with reduced ejection fraction (HFrEF) and have not been robustly studied in patients with HFpEF. Patients with diastolic dysfunction require higher ventricular filling pressures to maintain cardiac output. Current diuretic strategies may decrease stroke volume and cause worsening renal function (WRF) in HFpEF. This study will assess the effect of diastolic dysfunction on WRF in ADHF requiring IV loop diuretics at an academic medical center.

Methods: Using International Classification of Disease (ICD) codes and the electronic medical record, a retrospective chart review will examine the hospital course of patients admitted for ADHF with HFrEF (ejection fraction less than 40 percent) and HFpEF (ejection fraction greater than or equal to 50 percent). Inclusion criteria include age at least 18 years, administration of IV loop diuretics within 24 hours of admission, and a primary admission diagnosis of ADHF. Baseline demographics, comorbidities, echocardiographic parameters, and medications will be collected at the time of admission. Data collected will include loop diuretic doses, serum creatinine, weight, and urine output from admission through 72 hours. This study has been submitted to the Institutional Review Board for approval. All data will be collected without identifiers for confidentiality.
The primary endpoint is the incidence of WRF defined as an increase in serum creatinine of 0.3 mg/dL or greater within 72 hours of hospital admission. This endpoint will be compared between patients with HFrEF and HFpEF. Secondary endpoints will include changes in weight and total urine output over 72 hours. A pre-specified post-hoc analysis will compare the

incidence of WRF among patients with HFrEF to patients with advanced stages of diastolic dysfunction.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-054

Poster Title: Validation of a bivalirudin adjustment algorithm in pediatric patients

Primary Author: Caitlyn Luecke, St. Louis Children's Hospital, MO; **Email:** cxm0649@bjc.org

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Purpose: This retrospective chart review is being conducted to evaluate the validity of the bivalirudin adjustment algorithm currently utilized at St. Louis Children's Hospital for target level attainment in pediatric patients.

Methods: Study procedures were approved by the Institutional Review Board of Washington University in St. Louis. Patients who received bivalirudin continuous infusion for anticoagulation at St. Louis Children's Hospital (SLCH) between January 1, 2010 and July 15, 2016 were identified using the St. Louis Children's Hospital electronic medical record. Retrospective chart review of such patients will be conducted to evaluate the validity of the bivalirudin adjustment algorithm currently utilized at SLCH. Charts will be evaluated for bivalirudin course including the documented reason for use of bivalirudin, initial bivalirudin dose, bivalirudin dose adjustments and duration of treatment as well as monitoring parameters at baseline and throughout bivalirudin course including D dimer, complete blood counts, activated clotting time, activated partial thromboplastin time, prothrombin time, thromboelastography studies and documentation of bleeding. These data will be evaluated to determine the validity of the currently utilized bivalirudin adjustment algorithm for target level attainment and incidence of complications.

Results: In progress

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-055

Poster Title: Evaluation of an oral posaconazole dosing regimen in pediatric patients less than 12 years of age

Primary Author: Kristin Bettger, St. Louis Children's Hospital, MO; **Email:** kxb1226@bjc.org

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Purpose: Posaconazole use for treatment and prophylaxis of invasive fungal infections presents many challenges in the pediatric population less than 12 years old due to lack of universally accepted dosing recommendations, increased pharmacokinetic variability, and increased difficulty in obtaining target trough concentrations. The current dosing recommendation at St. Louis Children's Hospital is 9 mg/kg/dose with a maximum dose of 200 mg. The purpose of this study is to determine the percentage of pediatric patients less than 12 that were able to reach target trough levels with the current dosing strategy utilized.

Methods: This study is a retrospective chart review of patients less than 12 years of age that received posaconazole oral suspension at St. Louis Children's Hospital between June 2006 and June 2016. Patients will be identified using the electronic medical record system. Patient information collected will include demographics, posaconazole regimen and trough concentrations, hepatic enzymes before and after therapy, and concomitant medications. Descriptive statistics will be utilized to evaluate the primary outcome of percentage of patients receiving posaconazole therapy that achieve target trough concentrations with the current dosing strategy. The Mann-Whitney U test and Fisher's exact test will be used to compare differences in continuous and binomial variables, respectively, between patients who achieved target trough concentrations and those who did not.

Results: Not applicable

Conclusion: Not applicable

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-056

Poster Title: Retrospective evaluation of the impact of group education classes on glycemic control

Primary Author: Kacie Kuehn, St. Louis College of Pharmacy and St. Louis County Department of Public Health, MO; **Email:** kacie.kuehn@stlcop.edu

Additional Author (s):
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Purpose: Patients with low health literacy benefit from individual diabetes management including education. There is a gap in current literature on the glycemic effects of group diabetes education classes. The St. Louis County Department of Public Health (DPH) serves a primarily indigent population of patients at risk for low health literacy. The clinical pharmacy team has initiated a group diabetes education class that includes general diabetes knowledge, checking blood sugar, and medication adherence counseling. The objective of this study is to determine if group diabetes education class in addition to standard of care reduced A1c compared to standard of care alone.

Methods: This study will be submitted for Institutional Review Board approval. The primary outcome of this study is change in hemoglobin A1c from baseline. Patients will be manually identified if they are English speaking adults at least 18 years of age with type 1 or type 2 diabetes, a recent A1c, and a medication therapy services referral to the clinical pharmacy team at the DPH between September 1 and December 31, 2016. Patient data will be separated based on past attendance at a group diabetes education class between September 1 and December 31, 2016 and those that did not attend any education classes. Patients will be excluded if they attended a diabetes education class at an outside facility or if they have a pre-existing diagnosis of severe cognitive impairment. The following data will be collected: hemoglobin A1c in the 3 months prior to the class, A1c 3 months post class, satisfaction with care received, age, gender, race, height, weight, diabetes type, diabetes regimen, Newest Vital Sign score, REALM-SF score, highest level of education achieved, duration of diabetes, history of hypertension, dyslipidemia, coronary artery disease, and diabetes complications, alcohol use, and tobacco use.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-057

Poster Title: Evaluating the impact of pharmacist intervention in osteoporosis management

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Purpose: The American Association of Clinical Endocrinologists osteoporosis guidelines identify patients with high fracture risk as candidates for antifracture therapy. However, rates of antifracture therapy initiation and continuation in high-risk patients are consistently identified as inadequate in literature, leading to economic and clinical sequelae. Pharmacist intervention has been shown to increase patients' osteoporosis knowledge and compliance with clinical guidelines in small populations and over short study periods. The objective of this retrospective study is to evaluate the impact of pharmacist intervention on antifracture therapy initiation rates in a larger cohort of high-risk patients in a family medicine clinic over eight years.

Methods: This study will be submitted to the Mercy Hospital St. Louis and St. Louis College of Pharmacy Institutional Review Boards for approval. The primary outcome of this study is the difference in rates of initiation or continuation of antifracture therapy in female patients over 65 years of age with high fracture risk managed with pharmacist intervention versus those managed by physicians without pharmacist intervention. Secondary outcomes include measures of compliance with osteoporosis guidelines including percent of patients initiated on therapy after fracture and rates of vitamin D and calcium supplementation; measures of efficacy including change in bone mineral density and classification as osteoporotic or osteopenic; and measures of patient adherence including duration of potential exposure and discontinuation rates at six, twelve, and twenty-four months. Patients with a dual-energy x-ray absorptiometry (DXA) scan between June 1, 2008 and June 1, 2016 will be identified by the electronic medical record system, and patients' study group will be determined by the presence or absence of pharmacy referral at the time of first DXA. Data collection will include baseline demographics; DXA date and results for initial DXA and each subsequent DXA; documented FRAX scores; height and weight; current medications and problem list at time of DXA; vitamin D

and thyroid-stimulating hormone levels within twelve months prior to DXA; alcohol and tobacco use; and antifracture therapy refill authorization history.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-058

Poster Title: Single-institution comparison of four-factor prothrombin complex concentrate versus fresh frozen plasma

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Purpose: Four-factor prothrombin complex concentrate (4-FPCC) emergently reverses warfarin-induced coagulopathy by increasing vitamin K-dependent coagulation factors VII, IX, X, II, and proteins C and S. It is thought to be as effective as fresh frozen plasma (FFP) with fewer side effects. While the approved 4-FPCC in the United States has been compared to FFP in randomized controlled trials, it has not been evaluated in a real-world scenario. The purpose of this study is to further knowledge about the efficacy and safety of 4-FPCC and its use in clinical practice by comparing it to FFP.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will be a retrospective cohort analysis of patients 18 years or older who received 4-FPCC or FFP for the reversal of warfarin-induced coagulopathy from August 1, 2013 through November 30, 2016. Patients who received 4-FPCC will be identified through a previously developed study registry. Patients who received FFP will be identified via electronic medical records and randomly matched with patients who received 4-FPCC within the same time period. The primary outcome will be the percent of patients who achieve an INR of less than or equal to 1.3 at 30 minutes after completion of 4-FPCC or FFP infusion. Secondary outcomes include length of hospital stay, number of units of packed red blood cells required within 48 hours of administration of 4-FPCC or FFP, vitamin K administration, and the change in INR from baseline to next INR draw. Safety outcomes that will be assessed are volume status within 24 hours after administration of 4-FPCC or FFP, incidence of thrombotic events, and incidence of transfusion related acute lung injury within 48 hours after administration. Chi-square or Fisher's exact test will be used for all categorical data and Student t-test or Mann-Whitney U for parametric and nonparametric data, respectively.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-059

Poster Title: Impact of an interdisciplinary pharmacist-driven weight loss service: a pilot study

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Purpose: Weight loss has several beneficial effects. Even a loss of five percent can improve overall health outcomes. The American Heart Association/American College of Cardiology guidelines recommend an initial weight loss goal of five to ten percent within six months using a comprehensive lifestyle program focused on diet modification and exercise. If that weight loss goal is not met in six months, pharmacotherapy may be warranted. Limited literature is available assessing interdisciplinary weight loss services combining the work of pharmacists and dieticians. This study will help to determine the effect of an interdisciplinary, pharmacist-driven weight loss service compared to standard care.

Methods: This study will be submitted to the Institutional Review Board for approval. This study will compare two cohorts of patients with a body mass index (BMI) greater than 27 kg/m2 with at least one co-morbid condition or greater than 30 kg/m2. One group is managed by an interdisciplinary healthcare team, including a pharmacist; the other group is receiving standard weight loss care. The primary outcome is to determine the percent change weight loss in each group at six months. Using ICD-10 codes and referrals to the pharmacist-driven weight loss program at the Mercy Hospital outpatient clinic, adult patients who meet BMI eligibility will be identified via electronic medical records. Patients will be matched according to timing of follow-up office visits. The following data will be collected: age, gender, weight, height, race, smoking status, blood pressure, dietician visit history, hemoglobin A1c, lipid panels, thyroid stimulating hormone, and medications or co-morbidities that may affect weight or metabolism. Data will be collected retrospectively from each office visit in both groups. If patients in the pharmacist-driven group have not met their five percent weight loss goal in six months, pharmacotherapy with lorcaserin or liraglutide may be initiated. Due to clinic policy, only patients in the pharmacist-driven group are eligible to receive pharmacotherapy.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-060

Poster Title: Developing a pilot study for evaluating appropriate sodium polystyrene sulfonate use with a hyperkalemia order set

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Purpose: No consensus guidelines exist to assist practitioners in treating hyperkalemia. Many medications can induce hyperkalemia, including several that have long-term morbidity and mortality benefits. Sodium polystyrene sulfonate, a cation-exchange resin, is a common treatment option for elevated potassium. The inappropriate use of sodium polystyrene sulfonate may lead to potassium over correction, electrolyte disturbances, other serious adverse effects, and death. The objective of this study is to determine if the utilization of a hyperkalemia order set impacts the appropriate use of sodium polystyrene sulfonate.

Methods: This study will be submitted to the appropriate Institutional Review Boards for approval prior to commencement. Patients who received a dose of sodium polystyrene sulfonate will be identified from the electronic medical record and Vigilanz software. Study subjects will comprise two groups: those who received treatment from the hyperkalemia order set and those who received treatment not from an order set. The primary outcome will be the absolute difference in the proportion of patients with appropriate sodium polystyrene sulfonate between the two groups. Appropriate use will be defined as potassium level greater than or equal to 5.5 mEq/L prior to administrating sodium polystyrene sulfonate for patients with no contraindications to use, including: hypokalemia (less than 3.5 mEq/L), history of hypersensitivity to polystyrene sulfonate resins, and/or obstructive bowel disease. Data including, age, sex, race, creatine clearance, potassium, sodium, blood glucose, magnesium, temperature, heart rate, blood pressure, respiratory rate, oxygen saturation, weight, electrocardiogram, height, body mass index, dose of sodium polystyrene sulfonate, medications that affect potassium, disease states, length of stay, mortality, and symptoms will all be collected.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-061

Poster Title: Outpatient management of low-risk venous thromboembolism (VTE) in patients presenting to a Level I trauma center in an urban emergency department

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Jeremy Hampton

Purpose: Novel oral anticoagulants (NOACs) are approved for the treatment of acute deep venous thrombosis (DVT) and pulmonary embolism (PE), yet patients are typically admitted to the hospital even when treated with the single oral agents rivaroxaban and apixaban. The purpose of this study is to establish screening criteria for patients presenting to the emergency department with low-risk venous thromboembolism and to create a protocol for outpatient treatment. Patients will be followed to determine rates of major bleeding and subsequent hospital admission secondary to complications arising from therapy. This study will also assess predicted annual cost savings for decreased unnecessary admissions.

Methods: A protocol will be developed to identify patient presenting with pulmonary embolism or deep venous thrombosis classified as low-risk and eligible for outpatient treatment. This will be based on the pulmonary embolism severity index (PESI) criteria and provider assessment. The protocol will identify relevant clinical and social factors that may preclude outpatient management. Physicians will be provided guidance regarding recommended options for initial therapy with attention being given specifically to the patient's individual financial, social and payer source situation. This protocol will be submitted to the Institutional Review Board at Truman Medical Centers for corporate use and will be converted to an electronic order set for utilization during routine order entry. Providers will be educated on this process, and will be provided with the opportunity to ask questions. Patients will be referred to the anticoagulation clinic for follow up care. Patients will be monitored for reported major bleeding or admission to hospital. A retrospective review will be conducted to determine how many patients from January 1, 2016 to August 1, 2016 would have been eligible for outpatient treatment. This will be annualized to predict a cost-savings for unnecessary admissions.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-062

Poster Title: Evaluation of the appropriate use of an evidence-based pain and agitation order-set in the intensive care unit

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Purpose: In 2013 the Society of Critical Care Medicine (SCCM) released a guideline for the management of pain, agitation, and delirium in adult intensive care unit (ICU) patients. In order to provide optimal patient care and reduce adverse events it is essential that the SCCM guideline is followed accordingly. In 2015 an order-set aligned with the current SCCM guideline was implemented at Truman Medical Center. Even when armed with the information present in the literature and an order-set, multiple barriers may inhibit appropriate use. The purpose of this study is to assess adherence to this order-set and identify areas of improvement.

Methods: This study is pending approval of the Institutional Review Board at Truman Medical Center (TMC). This is a retrospective study based on data collected from routine hospital records at TMC over a 6-month period of time. Patients will be included if greater than or equal to 18 years old and mechanically ventilated in the ICU greater than 24 hours. Patients will be excluded if they require a deep level of sedation when mechanically ventilated (e.g. targeted temperature management, neuromuscular blockade, elevated intracranial pressure, status epilepticus). The primary endpoint will assess adherence to the order-set by evaluating the use of valid monitoring tools in conjunction with the pharmacologic interventions made. Adherence will be defined as meeting all the primary endpoints 100 percent of the time. The researcher's hypothesis of this study is that valid monitoring tools and pharmacologic interventions supported by the evidence-based order-set are not being used as directed by the order-set. Secondary endpoints include evaluating areas of improvement by assessing the number of times a different pain scale outside of the order-set was used as well as determining the number of times a sedative medication not a part of the order-set was used. Additional

secondary outcomes include evaluating the impact of the order-set on clinical outcomes including ICU length of stay and length of ventilator days.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-063

Poster Title: Implementation and evaluation of a novel vancomycin dosing protocol for morbidly obese patients in an academic medical center

Primary Author: Kathryn Burnett, Truman Medical Centers, MO; **Email:** kathryn.burnett@tmcmed.org

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Purpose: Due to increasing rates of obesity, alternate dosing recommendations are needed in order to provide adequate vancomycin therapy to patients that are morbidly obese. Traditional dosing strategies often result in subtherapeutic vancomycin trough concentrations. Morbidly obese patients have altered pharmacokinetics resulting in increased clearance of vancomycin and increased volume of distribution. There have been different dosing strategies that have been evaluated, but there is still a need for more research on this topic. The objective of this study is to determine the safety and efficacy of a novel vancomycin dosing strategy in morbidly obese patients.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a retrospective study comparing patients meeting inclusion criteria from December 2015 until March 2016 for baseline group and from December 2016 until March 2017 for post dosing strategy implementation group. The following data will be collected: patient age, gender, weight, height, serum creatinine, white blood cells, temperature, vancomycin dose, dose frequency and vancomycin trough concentrations. Ideal body weight, adjusted body weight and creatinine clearance using the Cockcroft-Gault equation will be calculated based on collected data. Patients that will be included must be at least 18 years of age, must have consulted for pharmacy to dose vancomycin, at least one vancomycin trough concentration drawn during maintenance dosing, and ideal body weight percentage of >137%. Patients will be excluded if they have a calculated creatinine clearance of less than 25 ml/min, patients receiving any type of dialysis, unsteady renal function, acute kidney injury, and if vancomycin therapy was initiated at an outside facility. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 12-064

Poster Title: Developing the framework to bill for inpatient pharmacist medication therapy services in an urban acute-care academic center

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Purpose: Pharmacists currently have authorization to bill for outpatient cognitive services through medication therapy management (MTM) programs. Contrarily, reimbursement for inpatient pharmacist cognitive services is not yet a nationally established practice. With potential pharmacist "Provider Status" designation in the future, constructing the framework and workflow for inpatient reimbursement will enable inpatient pharmacists to perform, to document, and to bill for services, such as medication reconciliation, and to calculate projected potential reimbursement.

Methods: Researchers will seek approval from the Institutional Review Board. Researchers will build progress note templates containing all of the required elements for documentation and for potential billing into the current electronic medical record (EMR) system. With guidance and approval from the Finance and Compliance Departments, progress notes will link to time-based billing codes. Medication reconciliation will occur, regardless of patient payer status, and will be initiated by physician consult or through the current protocol. Medication lists will be verified utilizing at least two sources to meet The Joint Commission standards. Researchers will contact commercial payers in attempts to establish reimbursement fees. Once the framework is completed, the transitional care pharmacist will begin documenting interventions and interactions with patients using the newly created electronic form. Data collection will analyze the number and types of interventions completed, payer sources, and the amount of potential and actual reimbursement. This data can help project future revenue potential. Additionally, researchers will track other pharmacist cognitive consults and determine the scale of potential revenue generation if this framework is applied to services that are not yet recognized by private payers. One common barrier is lack of pharmacist provider status. The templates for

billing for additional services will be developed in the event that pharmacists are recognized and are able to bill as individual providers.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-065

Poster Title: Clinical and economic outcomes of an alternative meropenem dosing strategy at an academic medical center

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Purpose: Due to an increased understanding of pharmacodynamic and pharmacokinetic concepts, along with growing rates of antimicrobial resistance, the dosing strategies of many common antibiotics have been evaluated and modified in order to enhance efficacy, limit adverse effects, and reduce unnecessary drug exposure. Several institutions have adopted these alternative dosing methods for meropenem, using more frequent but lower dosing to maximize pharmacodynamic target attainment. The purpose of this study is to assess the clinical and economic outcomes of an alternative meropenem dosing strategy of 500 mg intravenous every 6 hours as compared to traditional methods of dosing.

Methods: This retrospective analysis to be submitted for IRB approval will involve adult patients, age 18 years or older, and receiving meropenem for at least 3 days for an appropriate indication. Patients who are pregnant, needing 2 g every 8 hour dosing (cystic fibrosis, febrile neutropenia, or meningitis), or receiving a dose that is too low for their renal function for at least 1 day will be excluded. The analyzed timeframe will be after implementation, October 2016 through January 2017, compared to the same timeframe from the previous year. The following information will be collected by the research team: age, gender, body temperature, meropenem indication, meropenem dosing and duration, concomitant antibiotics, serum creatinine, white blood cell count, use of steroids or antipyretics, seizure incidence, and microbiologic data, if available. Baseline APACHE II scores will also be calculated. The primary end-point for investigation will be meropenem-related length of stay (days from initiation of meropenem until discharge). Secondary outcomes analyzed will include days to normalization of white blood cell count (white blood cell count between 4000 and 10,800 cells per cubic millimeter), and days to normalization of temperature (body temperature below 100.4 degrees Fahrenheit). A cost analysis and a safety analysis of seizure rates between the two groups will

also be conducted. All patient-related data will be de-identified and recorded on a Microsoft Excel spreadsheet.

Results: NA

Conclusion: NA

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-066

Poster Title: Improving care for open-heart surgery patients: decreasing time in the intensive care unit. Retrospective analysis of transitioning patients on stable norepinephrine infusion to telemetry unit.

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Purpose: The purpose of this study is to compare patients who underwent open-heart surgery before and after the use of non-titrated norepinephrine infusions outside the intensive care unit (ICU).

Methods: A retrospective chart review will be conducted. Outcomes will be compared between the cohort of patients receiving norepinephrine post open-heart for a period of two years prior to lifting the restriction of norepinephrine infusion to the ICU (11/5/10 - 11/5/12) to the cohort of patients receiving norepinephrine post open-heart in the four years since the Pharmacy and Therapeutics committee approved transition of patients receiving a stable rate of norepinephrine to the cardiovascular telemetry unit (11/6/12 - 1/1/16). The primary outcomes will be combined complications directly related to norepinephrine infusion (incidence of hypotension, acute kidney injury, extravasation) and readmission to the ICU. Secondary outcomes to be evaluated include will include 30-day mortality, 30-day readmission to the hospital, days to discharge post-operation, incidence of post-operative atrial fibrillation, survival to discharge and post-operative wound infection.

Results: In progress.

Conclusion: In progress.

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 12-067

Poster Title: Implementation of a pharmacy clinical surveillance program into an established clinical program

Primary Author: Alyissa Canady, Benefis Health System, MT; **Email:** alyissacanady@benefis.org

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Purpose: The integration of information technology into hospital pharmacies not only assists with more comprehensive patient assessments and follow-ups, but also helps advance the efficiency of the Antimicrobial Stewardship Program. The objective of this study is to evaluate how well pharmacists can integrate VigiLanz software into their daily clinical activities. The study will also monitor how often software activations result in pharmacist initiated antimicrobial de-escalation or change of therapy in the event of a mismatched organism and antimicrobial agent.

Methods: Education on utilization of VigiLanz will be given to each pharmacist. A one page reference will be provided. A competency will be completed within 3 months by the clinical pharmacists to evaluate their ability to appropriately utilize the software and to ensure continuity between users. In addition, all mismatched organism and antimicrobial agent activations and subsequent interventions will be compiled and evaluated for a period of time after VigiLanz is initiated. Components to be analyzed will include: whether the activation was appropriate, if the pharmacist made any suggestions to the provider, if any pharmacist recommendation was accepted by the provider resulting in a change of antimicrobial therapy, and if a change was already completed by the physician prior to a pharmacist intervention. By evaluating VigiLanz activations and the correlating intervention rate, we can modify and improve the activations triggered by the software to aid in the efficiency of the clinical pharmacists.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-068

Poster Title: Delirium rates in the intensive care unit: An evaluation of mechanically ventilated patients sedated with intravenous ketamine versus dexmedetomidine

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Purpose: Delirium has been associated with sedative use in the intensive care unit (ICU) and has an adverse effect on patient outcomes, including a 3-fold increase in mortality. Previous studies have found that intravenous (IV) dexmedetomidine causes less delirium than midazolam and propofol when used for sedation. However, dexmedetomidine can cause significant hypotension and bradycardia. Ketamine is an alternate sedative with fewer cardiac effects, but its impact on delirium is not well understood. The objective of this study will be to determine the rates of delirium in mechanically ventilated ICU patients receiving continuous IV infusions of dexmedetomidine or ketamine for sedation.

Methods: This single-center, retrospective cohort study will assess the rates of delirium in mechanically ventilated patients who are sedated with ketamine versus dexmedetomidine in a mixed medical-surgical ICU. Included patients will be adults admitted to the ICU for greater than or equal to 24 hours, mechanically ventilated for greater than or equal to 24 hours, receive either IV ketamine or dexmedetomidine as the only continuous infusion sedative for greater than or equal to 24 hours, and have at least 1 Confusion Assessment Method for the ICU (CAM-ICU) screening documented in the electronic medical record during the infusion. Exclusion criteria includes pregnancy or lactation, allergy to ketamine or dexmedetomidine, and a positive CAM-ICU screening before ketamine or dexmedetomidine was initiated. The primary outcome will be rate of delirium, defined by a positive CAM-ICU screen while on the ketamine or dexmedetomidine infusion. Secondary outcomes will include ICU length of stay, days on mechanical ventilation, time to onset of delirium, and duration of delirium (as defined by

positive CAM-ICU scores). Prior to initiation, the study will be submitted to the local institutional review board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-069

Poster Title: Impact of a standardized patient referral process for pharmacist-provided collaborative drug therapy management on access to and quality of care in a primary care clinic

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Purpose: Collaborative drug therapy management (CDTM) by pharmacists increases patients' access to high quality care and improves medication-related outcomes using a team-based approach. Comprehensive medication management (CMM) is the process by which this care is delivered and includes assessment of medications by indication, effectiveness, safety, and adherence. The values of providing CMM in the medical home include improved clinical outcomes, increased attention to medications, and saved physician time. The purpose of this study is to increase patient access to care after implementation of a standardized patient referral process to an ambulatory care pharmacist for management of hypertension and diabetes mellitus.

Methods: In this prospective, single-center study, a standardized patient referral process will be developed to identify patients who have not met therapeutic goals for diabetes mellitus or hypertension. Patients will be included if they have a hemoglobin A1c greater than or equal to 9 percent or a blood pressure greater than or equal to 150/90 mmHg and attended at least one appointment with a Billings Clinic primary care provider (PCP) during the study period. Patients in the intervention group must also be referred to the primary care pharmacist using the standardized referral process. Patients will be excluded if their PCP is a resident physician. Patients meeting eligibility criteria will automatically be scheduled with the pharmacist to receive CDTM. Patients will then make subsequent appointments with the pharmacist until target hemoglobin A1c and blood pressure goals are met. The primary outcome is the percentage of patients who attended their first appointment with the pharmacist. The secondary outcomes include provider satisfaction with the standardized patient referral

process, patient satisfaction with their care, change in hemoglobin A1c levels, change in blood pressure values, and percentage of patients who do not show up for their appointments. As a quality improvement initiative, approval from the local institutional review board will not be needed prior to initiation.

Results: n/a

Conclusion: n/a

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-070

Poster Title: Assessment of venous thromboembolism rates following elective total knee and total hip arthroplasties in patients receiving prophylactic twice daily aspirin

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Purpose: Patients who undergo high-risk orthopedic procedures including total knee arthroplasty (TKA) and total hip arthroplasty (THA) are at an increased risk of venous thromboembolism (VTE) following surgery. Cumulative baseline rates for symptomatic deep vein thrombosis and pulmonary embolism for the first 35 days post-op are 2.8% and 1.5%, respectively. The optimal medication for VTE prophylaxis is still debated and data regarding the role of aspirin in VTE prophylaxis is inconsistent. The purpose of this study is to determine VTE rates in patients who underwent elective TKA or THA and who received aspirin 325mg twice daily for VTE prophylaxis following surgery.

Methods: This retrospective, single-center cohort study will investigate the rates of VTEs that occurred within 60 days of elective TKA or THA in adult patients receiving aspirin 325 mg orally twice daily for 6 weeks. Patients who were pregnant or breastfeeding, or received a TKA or THA secondary to trauma will be excluded. The primary outcome is the percentage of patients who experienced VTEs following their elective TKA or THA while receiving prophylactic aspirin. Secondary outcomes include rates of symptomatic DVTs and PEs, time to VTE in patients experiencing an event, major bleeding within 60 days post-hospital discharge, rates of VTEs with other prophylaxis regimens, and 60-day all-cause mortality. Prior to initiation, the study will be submitted to the local institutional review board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Evaluative Study

Session-Board Number: 12-071

Poster Title: Formalization of an antimicrobial stewardship program in a small community hospital

Primary Author: Alexa Lockwood, Bozeman Health Deaconess Hospital, MT; **Email:** alexalockwood33@gmail.com

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Purpose: Inappropriate or unnecessary use of antimicrobials has a detrimental impact on the health care system and patient care. Antimicrobial stewardship programs (ASPs) strive to improve patient care through optimization of infection treatment while reducing adverse effects and antimicrobial resistance associated with anti-infective misuse. The IDSA/SHEA developed guidelines for forming ASPs, but data is limited for ASP implementation in small community hospitals. The purpose of this project was to formalize an ASP in a small community hospital then determine the initial impact of ASP pharmacists' interventions on patient outcomes and costs.

Methods: The formalization process began with a gap analysis of the hospital's antimicrobial program; practice gaps in the hospital were identified by reviewing IDSA/SHEA guidelines for development of an ASP and comparing elements of formalized programs to the hospital. This was followed by the development of a fully integrated, multi-pharmacist ASP service. The impact was studied with an IRB-approved single group pre-post design. Retrospective pre-ASP data were pulled from 2012-2013 patient records; prospective post-ASP data were collected for March 1 to June 30, 2015. Analyses included descriptive and comparison statistics.

Results: No significant differences in age, percent of patients on antimicrobials, or LOS were found between the pre and post groups. During the four-month study periods, significant decreases in DDD/1000 patient-days ranged from 4.6% ($p=0.12$) for all antimicrobials to 30.2% ($p < 0.001$) for the 18 most frequently used parenteral antimicrobial products. For all units except nursery, vancomycin and piperacillin/tazobactam DDD/1000 patient-days decreased by

63% ($p < 0.001$) and 36% ($p < 0.001$), respectively. Mean antibiotic charges per patient-day decreased from $10.44 to $3.09 ($p < 0.001$) and $18.04 to $11.29 ($p < 0.001$) for vancomycin and piperacillin/tazobactam, respectively. Pharmacist interventions increased from 58 in 2012/2013 to 160 in 2015. De-escalation of therapy was the most common intervention in both time periods.

Conclusion: Within four months of implementation in a small, community hospital, a formalized ASP program with pharmacists significantly decreased the DDD/1000 patient-days for parenteral antimicrobials and average vancomycin and piperacillin/tazobactam charges per patient-day but did not appear to impact the length of stay.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-072

Poster Title: Management of acute alcohol withdrawal at a community hospital in an area with a high prevalence of alcoholism

Primary Author: Melissa Cirillo, Bozeman Health Deaconess Hospital, MT; **Email:** cirillo.melissa27@gmail.com

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Purpose: According to the Centers for Disease Control and Prevention (CDC), the prevalence of binge drinking in Montana in 2015 was approximately 25%. Furthermore, in 2014, Montana had the second highest rate of alcohol-related deaths in the country. It is imperative that healthcare professionals are able to appropriately treat acute alcohol withdrawal syndrome. The purpose of this study is to evaluate this institution's alcohol withdrawal management protocol in comparison to treatment guidelines and other institution's current practices. Interventions made will be prospectively examined to determine if the changes result in fewer admissions to an intensive care unit (ICU).

Methods: Initially, adherence of the protocol to current treatment guidelines will be evaluated. During phase I, data will be collected retrospectively and analyzed for all patients with an admission diagnosis of alcohol withdrawal syndrome from January through June, 2016. Patients will be included if they are greater than 17 years of age with an admission diagnosis of alcohol withdrawal syndrome in the specified time frame. Patients with a concurrent diagnosis of polysubstance overdose will be excluded. Data will be collected via a clarity report and will include age, date of birth, gender, hospital admission areas (emergency department, medical floor, ICU), initial blood alcohol level, CIWA-Ar scores including dates and times recorded, and benzodiazepine administration, including medications, doses, dates, and times. Information found in phase I will be utilized in phase II to evaluate adherence to the protocol and assess potential interventions and education points. A six-month prospective evaluation of outcomes following potential interventions and education will be conducted from November 2016 through April 2017 utilizing the same inclusion/exclusion criteria and data as phase I.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-073

Poster Title: Evaluation of antimicrobial stewardship standards recently implemented within a community hospital.

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Amanda Woloszyn

Purpose: Overuse and inappropriate prescribing of antibiotics has long been recognized for contributing to microbial resistance and emergence of adverse outcomes. Antimicrobial Stewardship (AMS) has been defined by the Infectious Diseases Society of America (IDSA) as "coordinated interventions designed to improve and measure the appropriate use of agents by promoting the selection of optimal drug regimen including dosing, duration of therapy, and route of administration". The objective of this study is to evaluate AMS components demonstrated to improve patient outcomes, as evidenced by peer reviewed literature and incorporation into accreditation standards, recently implemented within a community hospital.

Methods: A preliminary evaluation using a published Centers for Disease Control and Prevention (CDC) checklist was conducted to assess baseline modalities in place and to identify opportunities to foster more robust AMS. Strategies to improve prescribing habits were identified through literature review. Two evidence-based approaches were selected for implementation that complement existing ASP: a prospective feedback/decision tool, and a structured reassessment/antibiotic timeout after 72 hours of empiric broad spectrum antibiotic use. Data will be collected from patients admitted to the medical floor to determine acceptance rates of recommendations, physician adherence with antibiotic timeouts, and days of therapy of antimicrobial use.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-074

Poster Title: Assessment of QTc interval monitoring in hospitalized patients receiving medications with known risk of torsades de pointes

Primary Author: Erica Rhein, Providence St. Patrick Hospital, MT; **Email:** erica.rhein@providence.org

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Purpose: Many medications commonly used in the hospital setting can cause QTc interval prolongation and have known risk of torsades de pointes when used at therapeutic doses. Therefore, monitoring of QTc at baseline, after initiation, and with dose adjustments of these medications is necessary to detect prolongation. The objective of this study is to investigate prescriber recognition of these pro-arrhythmic medications and subsequent initiation of appropriate QTc interval monitoring.

Methods: Patients who have received at least one dose of one or more QTc interval prolonging medications with known risk of torsades de pointes (Tdp) as identified by CredibleMeds.org will be identified prospectively using the electronic medical record. The data collected will include patient age, sex, admitting service, length of stay, medication(s) with risk of Tdp, duration of therapy, baseline ECG, repeat ECG(s), telemetry, and QTc measurement(s). QTc prolongation will be defined as QTc > 500 ms and/or an increase of > 60 ms from baseline. Patients admitted or followed by cardiology will be analyzed separately. Based on risk factors for QTc prolongation, patients will be divided into stratified risk groups to assess if there is a relationship between patient risk for QTc prolongation, prescribing of QTc prolonging medications, and monitoring of QTc.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-075

Poster Title: Correlation of anti-factor Xa and activated partial thromboplastin time for monitoring continuous intravenous unfractionated heparin infusion.

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Additional Author (s):

Purpose: Historically, activated partial thromboplastin time (aPTT) has been used to monitor anticoagulation by continuous intravenous unfractionated heparin (UFH) infusions. Anti-factor Xa (anti Xa) assay has emerged as an alternative laboratory measure for UFH infusion monitoring. The purpose of this study is to compare aPTT and anti Xa laboratory measures for monitoring intravenous UFH infusions at this Institution.

Methods: Patients included in the study had a diagnosis of known or suspected deep vein thrombosis, pulmonary embolism, or acute coronary syndrome and orders for continuous UFH infusion with pharmacy managed dosing, monitoring, and dosing adjustments. UFH dosing was based upon current Institution protocol, which utilizes aPTT as the laboratory marker to base dosing adjustments. Prospectively, staff pharmacists requested anti Xa assays to be added to the same blood specimen as the aPTT. Patients served as their own controls due to completing both aPTT and anti Xa laboratory measures on each blood specimen. The primary outcome will be the percentage of anti Xa values correlating with aPTT values within the desired therapeutic range. Secondary outcomes include time to therapeutic anticoagulation, time within the desired therapeutic range, number of blood draws per patient, and comparison of cost between anti Xa and aPTT.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-076

Poster Title: Impact of a pilot ambulatory care pharmacist in a family practice clinic

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Purpose: The objective of this pilot is to evaluate the impact of a pharmacist working collaboratively with the primary care team. This pilot will provide an assessment of how a pharmacist could be utilized in a family practice clinic to positively impact patient outcomes using pre-specified quality metrics, extend providers, and improve patient and provider satisfaction.

Methods: This study will be prospective in design. The pilot pharmacist will work closely with providers, nurses, and office staff in a pod of a family practice clinic. The pilot pharmacist will perform various elements of the proposed workflow including: reviewing and identifying patients at high risk for medication adverse effects, completing medication reconciliations, extensive medication educations, comprehensive medication management discussions, communicating with other providers of the patient's care, and assisting in a pneumonia vaccine outreach. The pharmacist will also complete any additional tasks as requested during this pilot. Metrics assessed can be divided into three main categories: Safety and Quality, Provider's Perspective, and Pharmacy Specific. Safety and Quality metrics may include those set forth by NCQA and CMS. Provider's perspective will be assessed subjectively and objectively. Pharmacy specific metrics are related to billing codes and pharmacist utilization and interventions in the clinic.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-077

Poster Title: Impact of medication reconciliation and discharge medication counseling services on patient satisfaction scores relating to communication about medications

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Purpose: When pharmacists perform medication reconciliation, there is an opportunity to assess patient understanding of medications and educate patients about their medications while simultaneously reconciling the medication list. The objective of this study is to determine the impact of pharmacist led medication reconciliation on patient satisfaction scores pertaining to communication about medications when pharmacists participate in patient education while reconciling the medication list.

Methods: One full time equivalent pharmacist will be designated to medication reconciliation and education services. Due to staff limitations, this pharmacy service will not be available on weekends. Newly admitted patients will be identified daily by running an admission report generated by the electronic medical record system. Patients discharging from the hospital will be identified by following physician discharge orders. Priority for medication reconciliation and education will be given to patients with a high risk for readmission as determined by a risk stratification tool developed by coders. Data collection will occur over a three month period. The following data will be collected both during admission and discharge medication reconciliation: number and type of discrepancies identified by pharmacists, number and type of educational interventions made by pharmacists, and time required for services provided. Patient satisfaction scores related to communication about medications, and thirty day readmission rates will also be collected after implementation of the pharmacist led medication reconciliation and education service. Average number of discrepancies per patient, interventions per patient, and time required per patient will be calculated.

Results: N/A

Conclusion: N/A

Submission Category: Automation/ Informatics

Submission Type: Research-in-Progress

Session-Board Number: 12-078

Poster Title: Implementing computerized provider order entry for total parenteral nutrition in a neonatal intensive care unit

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Purpose: By implementing computerized provider order entry (CPOE), the project authors intend to promote safer and more efficient ordering of total parenteral nutrition (TPN) orders for the neonatal population. Risk of error occurs during the TPN ordering process, because orders require input of multiple parameters involving complex information. As possible errors, TPN orders may contain incorrect calculations, missing data, hyperosmolar contents, illegible handwriting, and out of range values for micronutrients or macronutrients. CPOE may reduce risk of ordering error through utilization of functions such as automated calculations, required data fields, and hard limits for out of range values.

Methods: The study design will be presented to the Institutional Review Board. For the intervention, an informatics pharmacist will implement a computerized order form for total parenteral nutrition (TPN) orders. Acting as a clinical decision support system, the computerized TPN order form will automatically detect when certain values are out of range such as osmolarity, electrolyte contents, macronutrient contents, bag volume, and infusion rate. The computerized order forms also have capability to perform calculations for parameters such as infusion rate and TPN volume.
The prospective, observational study will include all TPN orders written for patients in the neonatal intensive care unit (NICU). To determine whether the intervention results in an 85 percent relative reduction in TPN orders with an error, the sample must contain 252 orders (126 orders in each arm of the study) to meet 80 percent power. Power calculations assume a 5 percent risk of Type I error and a 20 percent risk of Type II error. A chi-squared statistical test will be used to determine whether the intervention results in a significantly decreased error rate. Authors will use a one-tailed t-test to determine if the intervention results in decreased

time from when a neonatologist completes a TPN order to when a pharmacist acknowledges a TPN order.

Results: Not applicable.

Conclusion: Not applicable.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Evaluative Study

Session-Board Number: 12-079

Poster Title: Diltiazem versus verapamil in the prevention of arterial spasm during transradial access for coronary procedures: A non-inferiority trial

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Purpose: The radial artery is becoming a common alternative site to the femoral artery in cardiac catheterization procedures due to earlier mobilization, fewer vascular complications and increased patient satisfaction. The most common adverse effect for radial access compared to femoral access (previous standard of care) is a significant increase in radial artery spasm (RAS) due to smaller vessel diameter. RAS is also the most common cause of transradial access failure. This study will investigate the efficiency of diltiazem versus verapamil to prevent arterial spasm when added to a radial artery cocktail of heparin and nitroglycerin in patients who undergo cardiac catheterization.

Methods: This study will be submitted to the investigational review board (IRB) for approval and will target the inpatient population who are scheduled to receive non-emergent cardiac catheterization. At the time of initial visit with the cardiology nurse practitioners, patients will have the procedures explained by the providers and the nurse practitioners will obtain consent for the procedure itself followed by the optional consent for this study. Exclusion criteria is defined by previous calcium channel blocker therapy, severe systolic heart failure (defined as LVEF < 20 percent), and a negative Barbeau's test at the time of the procedure.
Patients will receive either diltiazem 12.5 mg or verapamil 2.5 mg in normal saline that will be administered through the radial artery as part of a cocktail (heparin 2500 units + nitroglycerine 200 mcg + investigational drug) to prevent RAS. The medical staff performing the catheterization will be blinded to the study drug and will record vital signs immediately prior to administration and five minutes afterwards. The primary endpoint is defined as radial artery spasm (resistance during catheter maneuver, inability to freely manipulate the catheter, or

difficulty in removing the catheter with the presence of forearm pain during the procedure). Secondary endpoints include change in post-administration blood pressure and heart rate, burning after administration of the study medication, and failed radial artery access.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-080

Poster Title: Emergency department pharmacist interventions in a small, rural hospital

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Purpose: The emergency department (ED) is an area of high patient volume with a wide array of illnesses and acuity. These factors put patients in the ED at high risk for medication errors and other misadventures. An emergency medicine pharmacist (EMP) can play a key role to prevent medication errors and optimally manage medications.

Methods: This study aims to identify areas where an EMP can have a positive impact on the functioning of an ED in a small, rural hospital. A pharmacist will be decentralized to the ED for 8 hours a day, Monday through Friday, for two 4-week long rotations separated by a period of time to pilot an EMP role. During this time the pharmacist will conduct med reconciliations when requested by a physician, answer drug information questions, and assist the ED staff with other tasks related to medication management. All interventions made by the EMP will be tracked using a computer program. The data on interventions will then be quantified into number of interventions, amount of time spent on interventions, and projected cost-savings for the hospital. Comparisons will be made between the two rotations separated in time, to determine if and how the role of the EMP evolves.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-081

Poster Title: Retrospective Drug Dosing Evaluation of Vancomycin in Obese Patients

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Purpose: Vancomycin is often a drug of choice for use in patients with suspected or proven infection due to susceptible gram-positive organisms. The target trough concentration for the drug depends on the type of infection. Unfortunately, the ideal dosing of vancomycin in the obese populations is not clearly defined to achieve the desired target concentrations in order to optimize efficacy and minimize toxicity. The purpose of this drug utilization evaluation (DUE) was to gain a better understanding of vancomycin dosing in obese populations defined as a body mass index (BMI) ≥30 kg/m2.

Methods: Vancomycin monitoring sheets from the pharmacy-managed pharmacokinetic service were used to identify patients for data collection. Patients were included in the retrospective DUE if they had both an initial vancomycin trough concentration prediction as well as a subsequent analysis based on single serum concentration; the Kinetidex® program was used for analysis. Electronic health records (EHR) were used to collect or verify information. Patients were excluded for any of the following reasons: missed dose(s) or dose change(s) prior to trough level draw; adjustments to initial prediction due to serum creatinine changes (prior to level draw); and initial dose given at a different institution prior to Community Medical Center admission.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-082

Poster Title: Impact of a pharmacist-led medication safety committee on adverse drug events and reporting measured by a modified Global Trigger Tool-based report.

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Purpose: Adverse drug events are a serious problem, resulting in significant morbidity and mortality and billions of dollars in healthcare costs annually. It is estimated that only 10-20 percent of adverse drug events are voluntarily reported. The Institute for Healthcare Improvement developed the Global Trigger Tool as a way to monitor rates of adverse drug events without relying on voluntary reporting. This study aims to quantify the rates of high priority adverse drug events and rates of voluntary reporting, before and after the implementation of a pharmacist-led medication safety committee in a 318-bed acute care hospital.

Methods: This study will utilize a quasi-experimental design and will be submitted to the Institutional Review Board for approval. Patients over the age of 18 who are admitted to Lovelace Medical Center during the study period of July, 2016 through February, 2017 will be included in the analysis. A pharmacist-led committee will be created to implement medication safety interventions and process improvements. Baseline data will be collected retrospectively for the period prior to the implementation of the medication safety committee and prospectively thereafter. We will use a report adapted from the Global Trigger Tool to identify all patients who have a blood glucose measuring less than 50 mg/dL, elevated International Normalized Ratio greater than 6, Partial Thrombin Time greater than 100 seconds, or who are given dextrose, glucagon, vitamin K, protamine sulfate, or naloxone during the study period. Investigators will review the charts of all patients identified by the trigger report using a standardized chart review protocol in order to determine if the patient experienced a high

priority adverse event (severe hypoglycemia, hemorrhage, or oversedation with opioids requiring reversal). Rates of serious adverse drug events and rates of voluntary reporting over the study period will be trended using descriptive statistics. The event and reporting rates before and after the implementation of the medication safety committee will be analyzed using Chi-Square.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-083

Poster Title: Effect of a pharmacist-driven antimicrobial stewardship bundle on hospital-associated Clostridium difficile infection rate in an acute care hospital

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Purpose: According to the Center for Disease Control and Prevention, Clostridium difficile is the most frequently reported hospital-acquired pathogen. The organism causes 337,000 infections and 14,000 deaths every year in the United States. Additional health care costs related to this hospital-acquired infection are estimated at $4.8 billion for acute care facilities, reinforcing the importance of reducing Clostridium difficile infections. The objective of this study is to reduce hospital-acquired Clostridium difficile infections in an acute care hospital following the implementation of a pharmacist-driven antimicrobial stewardship bundle.

Methods: This study will be submitted to the Institutional Review Board for approval. There will be retrospective and prospective components surrounding implementation of the intervention, following quasi-experimental design. Retrospective data in patients with a diagnosis of hospital-acquired Clostridium difficile infection from February to July of 2016 include: patient age, gender, antibiotics, proton pump inhibitor use, duration of antibiotic use, antibiotic indication, admission diagnosis, and length of stay. The intervention is implementation of a pharmacist-driven antimicrobial stewardship bundle starting October 2016. The bundle consists of three components: pharmacists will verify appropriate indication for all proton pump inhibitor orders, recommend an infectious disease consult for patients receiving piperacillin-tazobactam or carbapenem for seventy-two hours and forty-eight hours, respectively, and perform an antibiotic time-out per protocol for patients receiving forty-eight hours of empiric antibiotic therapy consisting of targeted antibiotics. The time-out will consist of a thorough review of patients receiving forty-eight hours of cefepime, ceftriaxone, ciprofloxacin, levofloxacin, or piperacillin-tazobactam. When appropriate, pharmacists will recommend de-escalation or

discontinuation of antibiotics to the prescriber. Pharmacists will record their recommendations on a standardized collection sheet for data analysis. The Clostridium difficile infection rate will be analyzed prospectively using the same parameters as the retrospective analysis. Additional data includes rate of prescriber acceptance of pharmacist recommendations from October 2016 to March 2017. Statistical analysis method will be Chi-Square.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-084

Poster Title: Impact of a pharmacist-led transition of care program at a community hospital and family medicine center on readmission rates

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Purpose: Hospital readmissions impose a large burden on the health care system. Studies have estimated that 47 percent of readmissions are preventable and 38 percent of all hospital readmissions are medication-related. Pharmacists have the unique set of skills, knowledge, and training to complete accurate medication reconciliation, reduce medication errors, and improve patient adherence. The purpose of this study is to determine if a pharmacist-led transitional care program will reduce readmission rates, medication errors, and adherence to post-discharge follow up visits at a 199-bed hospital for patients followed by a family medicine center.

Methods: This study will be submitted to the Institutional Review Board for approval as a single-center, pre- and post- implementation of a transition of care program that will utilize historical controls to determine the benefits of the program. Patients admitted to a community hospital who plan to follow up at the Family Medicine Center for their primary care will be recruited to enroll in the study. Patients eligible for the study will receive a phone call within 48 hours of discharge, which will focus on assessing the patient's health status, medication comprehension and adherence, and coordination of appointments. High-risk patients will be scheduled for an appointment with the PGY1 pharmacy resident for comprehensive medication management; this appointment will be in addition to the hospital follow up visit scheduled with their primary care physician but at no additional cost to the patients.
The primary outcome of the study will be the rate of inpatient readmissions for the family medicine service within 30 days of hospital discharge. Secondary outcomes will be medication errors avoided and the percentage of patients who attend the follow-up visit with their providers. A subgroup analysis will be performed on the patients who are scheduled for a pharmacist clinic visit to determine any potential benefits for high-risk individuals.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-085

Poster Title: Medication regimen complexity and hospital readmissions in a rural healthcare system

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Purpose: Medication non-adherence can result in poorer outcomes for patients, including preventable hospital readmissions and increased utilization of emergency department services, and ultimately increased cost to the healthcare system. This increased utilization of hospital and emergency services can be especially difficult in resource-constrained rural settings. The Medication Regimen Complexity (MRC) index has been proposed as a tool to predict a patient's potential for an adverse drug event and hospital readmission. The objective of this study is to determine whether MRC can be used to predict readmissions among patients in a rural healthcare delivery system.

Methods: This study will utilize a retrospective cohort design and will be submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify patients admitted over a 12-month period to five regional medical centers in rural New Mexico. The discharge MRC score will be calculated for all patients using the MRC Data Capture Tool developed by the University of Colorado. In addition to the MRC score, data will be collected on patient age, sex, admission diagnosis, insurance provider, Charlson comorbidity index score, medication count, emergency department utilization and hospital readmissions. All data will be collected and stored anonymously and will be maintained securely. The association between unplanned readmissions within 90 days and discharge medication regimen complexity will be assessed. The study will also look at the association between medication regimen complexity and utilization of emergency services within 90 days from discharge.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-086

Poster Title: Appropriateness of Empiric Piperacillin/Tazobactam in Suspected Infected Pleural Effusions and Diabetic Foot Infections

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Purpose: Piperacillin/tazobactam is a broad spectrum intravenous antibiotic with activity against gram-positive, gram-negative and anaerobic bacterial species, including Pseudomonas aeruginosa. The objective of this study is to determine the appropriateness of empiric piperacillin/tazobactam by evaluating the prevalence of Pseudomonas aeruginosa isolates from adult inpatients with either a suspected infected pleural effusion or a diabetic foot infection and the frequency of empiric piperacillin/tazobactam therapy. If our patients have a low rate of Pseudomonas aeruginosa infection, we are hopeful this will be a powerful tool that our antibiotic stewardship team can use in their continued efforts at reducing unnecessary piperacillin/tazobactam utilization.

Methods: This study will be submitted to the Institutional Review Board for approval. This will be a retrospective analysis involving data collection from patient charts including demographics, patient diagnosis (utilizing ICD-9 and ICD-10 codes), microbiology results, and antimicrobial use. The primary outcome is determination of the incidence of Pseudomonas aeruginosa infection and the frequency of piperacillin/tazobactam therapy. Secondary endpoints include evaluation of pleural fluid for appropriate microbiological and chemical analysis to distinguish between transudative and exudative effusions and frequency of antibiotics given prior to culture and bone biopsy in patients with diabetic foot infections.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-087

Poster Title: Cost and hemoglobin A1C outcomes of medication therapy management (MTM) services provided by advanced-practice pharmacists

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Purpose: Medicare Part D programs are required to offer medication therapy management (MTM) services to a defined subset of their beneficiaries. These services consist of an annual comprehensive medication review with a qualifying provider, with the goal of optimizing therapeutic outcomes and reducing adverse events with medication use. Insurers may utilize their own personnel to conduct these visits, or can contract with outside personnel. This study seeks to evaluate the MTM services provided for a specific insurer by a group of pharmacists, termed Pharmacists Clinicians (PhCs) that hold advanced practice licenses allowing prescriptive authority.

Methods: This retrospective pre-post study will be submitted to the Institutional Review Board. Patients were targeted for inclusion in the MTM program in 2015 if they had been diagnosed with at least 2 eligible chronic disease states, were on at least 6 medications from eligible classes, and met cost criteria. Patients will be considered for inclusion in the study if they met the above criteria and completed an MTM visit with a PhC in 2015. Patients will be excluded from the study if they had previously completed an MTM visit with a PhC. The study will compare outcomes of interest in patients in the year prior and the year after their MTM visit. The primary outcomes will be the cost of medication to the insurer and to the patient for each patient. Secondary outcomes will include the cost of medications in pre-specified classes to the insurer and to the patient. In the subgroup of patients with a diagnosis of Type 2 Diabetes, an interrupted time-series will be used to compare hemoglobin A1C in the year prior and the year

after the MTM visit. Finally, each of the interventions made by the PhCs will be categorized based on a pre-specified classification scheme. All data will come from the electronic medical record, the insurer's prescription claims database, and the insurer's MTM documentation database.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-088

Poster Title: Comparison of blood pressure in diabetic patients managed by pharmacist clinicians in a collaborative care model versus patients managed without pharmacist clinician collaboration.

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Purpose: New Mexico requires the additional training of pharmacists to be certified as Pharmacist Clinicians (PhCs) who are given prescriptive authority by the state boards of medicine and pharmacy. Presbyterian Healthcare Services utilizes 17 PhCs in outpatient ambulatory care clinics for various disease states. PhCs manage multiple comorbidities in single patients; however outcomes are reported through primary care physician outcomes without measuring pharmacist interventions directly. The objective of this study is to compare clinical control of blood pressure in diabetic patients who are managed by PhCs with patients who are managed without PhC collaboration.

Methods: This study is designed under the guidelines of the Institutional Review Board and will be submitted for approval. The study will be a retrospective cohort study. Medical coding and diagnosis codes along with problem list history will identify all patients with disease state diagnosis of type one and type two diabetes mellitus. Patients who had two or more visits with a PhC or non PhC between the dates August 2014 and August 2016 will be identified. Excluded patients will include pregnancy during study period and patients who do not meet the visit criteria. Data to be collected are: patient age, gender, height, weight, glycated hemoglobin, blood glucose, systolic blood pressure (SBP), diastolic blood pressure (DBP), total cholesterol, low density lipoprotein, high density lipoprotein, triglycerides, serum creatinine, and medications. All data reviewed will be recorded in compliance with institution protected health information regulations. Descriptive as well as inferential statistics will be used to analyze the data to make a conclusion about the patient outcomes.

Results: N/a

Conclusion: N/a

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 12-089

Poster Title: Rates of pneumocystis jiroveci pneumonia with and without prophylactic trimethoprim-sulfamethoxazole in Non-Hodgkin Lymphoma

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Purpose: Not all lymphoma patients meet criteria for pneumocystis jiroveci pneumonia (PJP) prophylaxis. In addition, the risk status for PJP for common Non-Hodgkin Lymphoma (NHL) regimens such as R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, prednisone) is not entirely conclusive. The objective of this study is to determine if there is a difference in rates of PJP with and without prophylactic trimethoprim-sulfamethoxazole (TMP/SMX) in patients with NHL. Secondary outcomes will determine if there is a difference in rates of admission due to febrile neutropenia (FN), acute kidney injury (AKI), and differences in length of stay (LOS) between the two groups for FN.

Methods: The study has been submitted to the Institutional Review Board for approval. This retrospective cohort analysis will evaluate adult patients with a diagnosis of NHL who started and completed ≥ 1 cycle of chemotherapy from 1/1/2010–8/31/2016. Exclusion criteria include pediatric patients (< 18 years), not on chemotherapy, in patients receiving PJP prophylaxis (not receiving TMP/SMX all throughout chemotherapy), and patients that cannot be on TMP/SMX prophylaxis (e.g., allergy). Diagnosis of NHL will be identified by business intelligence (BI) reports. Patients with NHL who received prophylactic TMP/SMX will be identified using electronic medical record medication reports and verified by BI reports. Rates of PJP, admission due to FN, AKI, and difference in LOS between the two groups for FN will be determined by ICD-9 &10 codes via BI reports. Demographics variables to be collected include patient identification numbers, age, sex, and race/ethnicity. The a priori level will be 0.05 with a power of 80%. Demographic data will be summarized using descriptive statistics. Categorical variables

with nominal data looking at rates of PJP, rates of admission due to FN, and AKI will be described as frequencies and analyzed using a Chi-square test with a 95% confidence interval (CI). Continuous variables, such as mean LOS for FN admissions, will be analyzed using the student t-test. Multiple logistic regression will be used for the multivariate analysis.

Results: Pending

Conclusion: Pending

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-090

Poster Title: Evaluation of acceptance rates of interventions made by pharmacists in a call center versus pharmacists with prescriptive authority providing face-to-face disease state management

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Purpose: This study aims to evaluate acceptance rates of interventions made by pharmacists working in a medication therapy management (MTM) call center setting compared to a pharmacist clinician (PhC) with prescriptive authority. Furthermore, the types of medication related problems identified and recommended intervention to resolve the problem will be analyzed to evaluate differences in interventions made by the pharmacists in each practice setting. With this information, the clinical impact of pharmacists in various practice settings will be better understood, the quality of the intervention and rate of acceptance can be analyzed, and opportunities for additional interventions by pharmacists can be identified.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients seen by pharmacist clinicians in a primary care setting and patients evaluated by MTM call center pharmacists will be targeted for inclusion into the study. Intervention data is currently entered into an electronic intervention form located inside the electronic medical record (EMR) for each patient evaluated by an MTM call center pharmacist as well as patients seen by a pharmacist clinician in a primary care setting. Interventions entered between July 2016 and December 2016 will be analyzed. Data will be collected from a de-identified database of interventions made by MTM pharmacists and pharmacist clinicians in a primary care setting. Data collected will include the patient age category and gender but will not include any identifying information about the patient. The medication-related problem identified by the pharmacist will be categorized into one of four categories for analysis. Further information to

be collected will include disease state involved, drug involved, and acceptance status of the recommendation made.

Results: Results pending

Conclusion: Conclusion pending

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-091

Poster Title: From cefazolin in vitro susceptibility to clinical use of cephalexin: Could we be wrong?

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Purpose: First generation cephalosporins, including cefazolin and cephalexin, are frequently prescribed as treatment for Gram-negative bacterial infections. Although cefazolin susceptibilities are often reported, testing for cephalexin is not routinely performed by most laboratories and cannot be interpreted accurately as no guidelines are provided by the Clinical and Laboratory Standards Institute. Providers regularly extrapolate cefazolin susceptibilities to use of cephalexin in practice as the former has historically been viewed as a surrogate marker, despite previous literature indicating that Enterobacteriaceae susceptibilities may differ. This study aims to determine the magnitude of difference, if any, that exists for Enterobacteriaceae susceptibilities to cefazolin and cephalexin.

Methods: Clinical isolates of Escherichia coli, Klebsiella pneumoniae, and Proteus mirabilis will be obtained from urine or blood cultures of patients receiving care at the University of New Mexico Hospital. Collection will occur from January 2015 through December 2016 at TriCore Laboratories. Isolates from patients under 18 years of age, and those identified as ESBL producers will be excluded. Approximately 350 combined isolates of E.coli, K.pneumoniae, and P.mirabilis will be collected. All isolates collected will have antimicrobial susceptibilities generated by the BD Phoenix Automated Microbiology System.
Minimum inhibitory concentrations (MIC) will be determined for all isolates by broth microdilution (BMD) methods for both cefazolin and cephalexin. Two primary comparisons will then be made. First, differences between cefazolin and cephalexin MICs will be observed. If a difference is identified, the magnitude of difference will then be determined using time-kill studies mimicking clinical concentrations. Secondly, for cefazolin, comparisons will be made between the MICs determined by the BD Phoenix and BMD. Discrepancies observed for these comparisons will be defined as either first or second degree errors, depending on which testing

methods were used and which cephalosporin was resistant. Each of these comparisons will be made for all isolates as a whole, single isolates, and prespecified subgroups of isolates. Isolates will be stored at -80 degC and subbed twice prior to antimicrobial susceptibility testing.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-092

Poster Title: Once daily versus twice daily enoxaparin for venous thromboembolism treatment in cancer patients

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Purpose: Cancer patients are at increased risk for both venous thromboembolism (VTE) and bleeding complications. National guidelines recommend using low molecular weight heparin (LMWH) for VTE treatment in cancer patients. Dalteparin is the only FDA approved LMWH for VTE treatment in cancer patients. No randomized controlled trials have investigated enoxaparin once versus twice daily for VTE treatment in this population. The objective of the study is to compare the safety and efficacy of enoxaparin 1 mg/kg twice daily versus enoxaparin 1.5 mg/kg/day for the treatment of acute VTE in cancer patients.

Methods: This retrospective, single-center, observational study has been submitted for Institutional Review Board approval. The study will include actively treated cancer patients 18 years and older prescribed enoxaparin 1 mg/kg twice daily or 1.5 mg/kg/day for acute VTE treatment at a regional academic cancer center from 2012-2016. All patients must have a follow-up within 6 months of enoxaparin initiation. Patients with active hemorrhage or fibrinolytic therapy within 3 days prior, a CrCl less than or equal to 30 mL/min, eye, spinal, or CNS surgery within the prior month will be excluded from the study. The primary outcome is the incidence of clinically relevant (major and non-major) bleeding within 30 days of enoxaparin initiation. Secondary outcomes include the incidence of clinically relevant bleeding and/or thrombosis at 3 months and 6 months, and a composite outcome of recurrent thrombosis and death. Patients who change enoxaparin dosing strategies will be excluded from secondary outcomes analysis. Data will be analyzed using descriptive statistics, a Chi-square test, and independent t-test.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-093

Poster Title: Impact of administration time of tranexamic acid in urban trauma patients

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Purpose: CRASH-II showed that adult trauma patients receiving tranexamic acid (TXA) less than three hours from time of injury decreased mortality compared with those receiving TXA between three and eight hours of injury, or not at all. The objective of this study is to compare use of blood products in adult, urban trauma patients whom receive TXA closer to time of injury versus those receiving TXA further from time of injury.

Methods: Adult trauma patients receiving 1 gram TXA within the first eight hours of emergency department admission will be retrospectively identified via automated dispensing cabinet, electronic medical record (EMR) and state trauma registry data. Only first admissions will be included for patients with multiple trauma-related admissions. Patients without information regarding type of injury will be excluded. Pre-hospital data collected from the trauma registry will include: injury severity score, type and time of injury, transport time, medications, cardiopulmonary resuscitation, vitals and Glasgow Coma Scale. Hospital data collected from the EMR will include: age, sex, ethnicity, initial labs, total TXA dose and time of first administration, factor product use, blood products and fluids used in the first 24-hours of admission, anticoagulation status at the time of admission, intensive care unit (ICU) and hospital length of stay, thrombotic events, emergent surgery within the first 24-hours, and patient disposition. All data will be de-identified on coded data sheets prior to data analyses.
The primary outcome will evaluate 24-hour blood product usage from time of patient arrival by time from injury to TXA administration. Secondary outcomes will include mortality from blood loss, all-cause mortality, thrombotic events, and ICU and hospital length of stay. Data analyses will include descriptive statistics and chi-square and t-test for categorical and continuous variables, respectively. This study will be submitted to the Institutional Review Board for approval.

Results: n/a

Conclusion: n/a

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-094

Poster Title: Evaluation of fixed-dose 4-factor prothrombin complex concentrate for emergent reversal of warfarin

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Allison Burnett

Purpose: Published literature suggests that a fixed-dose PCC may be efficacious in managing warfarin-associated hemorrhage. In October 2016, our institution conducted a pilot, quality improvement project, utilizing a fixed dose of 1500 units of 4-factor PCC (4FPCC) for all patients requiring emergent warfarin reversal for a life-threatening bleed or need for urgent/emergent surgery. The purpose of this evaluation is to determine the efficacy of fixed-dose 4FPCC in reducing the International Normalized Ratio (INR) to less than or equal to 1.5 among warfarin patients with need for urgent or emergent anticoagulation reversal.

Methods: This evaluation will be submitted to the Institutional Review Board for approval. Electronic medical records will be reviewed to retrospectively identify patients 18 years of age and older who received a fixed 1500 unit dose of 4FPCC for urgent/ emergent warfarin reversal starting October of 2016. Exclusion criteria include: patients with no INR data available, or if the post-4FPCC INR is drawn greater than 3 hours after administration. The following data will be collected: age, weight, gender, pre- and post- treatment INR, patient location, concomitant antithrombotics, and indication for anticoagulation and reversal. We will determine timing of 4FPCC ordering, verification, delivery, and administration, concomitant vitamin K use, and time to repeat INR. We will evaluate the use of 4FPCC rescue doses for patients not achieving target INR or clinical hemostasis, or among patients whom a lower target INR is desired, per provider discretion. We will also evaluate confirmed thrombotic events occurring less than or equal to and greater than 72 hours after 4FPCC administration, and time to resumption of anticoagulation if applicable. The primary outcome is the proportion of patients who achieve an INR equal to 1.5 or less with a single fixed dose of 1500 units of 4FPCC. Secondary outcomes

include medication turnaround times, attainment of target INR or clinical hemostasis, use of rescue doses, thrombotic events, and cost savings.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-095

Poster Title: Correlation between spontaneous bacterial peritonitis prophylaxis and 90-day hospital readmission rates

Primary Author: Laura Gonzalez, University of New Mexico Hospital, NM; **Email:** lauracg@salud.unm.edu

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Purpose: The American Association of the Study of Liver Diseases recognizes that spontaneous bacterial peritonitis (SBP) antibiotic prophylaxis is key in preventing recurrent SBP infections. The purpose of this study is to assess whether patients who were treated for an SBP infection were discharged with recommendations for SBP prophylaxis and determine their 90 day hospital readmission rate.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a retrospective review of adult patients aged 18 and older admitted to an academic medical center between January 1, 2015 and June 30, 2016 and treated for SBP. The Vizient ™ database will be utilized to identify patients who received an ICD-9 or ICD-10 code for "percutaneous abdominal drain." Pregnant women or patients who were treated for SBP or had the paracentesis procedure performed at an outside institution will be excluded from the study. The electronic medical records of the patients will be retrospectively reviewed using Cerner®. Data to be included: demographics (i.e. age and gender), drug allergies, weight, pharmacological treatment of SBP, primary hospital treatment team, fluid culture results, baseline laboratories to calculate MELD score including serum sodium, serum creatinine, albumin, serum bilirubin, International normalized ratio (I.N.R.), need for dialysis, antibiotic recommended for SBP prophylaxis, admission, discharge and readmission rates within 90 days following their initial SBP hospitalization. All patient information will be de-identified and presented in aggregate.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 12-096

Poster Title: Evaluation of peri-procedural antithrombotic management at a large, academic teaching hospital: Time to burn the bridge?

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Purpose: Historically, peri-procedural bridging strategies have been employed to prevent thromboembolic complications in warfarin patients requiring temporary interruption of therapy for invasive procedures. This practice is based on expert consensus, biologic rationale and pharmacokinetics of anticoagulants rather than robust clinical trial data. Recent studies have demonstrated that the practice of peri-procedural bridging significantly increases the incidence of bleeding without reducing thromboembolic events. As a result, many institutions have modified their peri-procedural antithrombotic management. The objective of this study is to evaluate peri-procedural antithrombotic management strategies before and after protocol changes were implemented at our institution.

Methods: This study is a single-center, retrospective, pre-post observational study. The primary outcome is the proportion of patients receiving bridging therapy pre- and post-intervention. Secondary outcomes are incidence of clinically relevant bleeding and thromboembolic complications up to 30-days following the index procedure and proportion of patients with other complications. Patients will be identified using our outpatient anticoagulation peri-procedural database and further screened for inclusion utilizing the electronic health record. Patients are included if they are ≥ 18 years of age, prescribed warfarin therapy, underwent an invasive procedure at our institution requiring temporary warfarin interruption during the specified intervention periods, and were followed at the hospital's outpatient anticoagulation clinic for ≥3 months prior to and 30 days after the index procedure. Patients will be excluded if their invasive procedure occurred outside our institution. Data collected will include: age,

gender, race, weight, anticoagulation indication, CHADS2VASc score, hypertension, thrombotic and bleeding risk stratification, time in therapeutic range (TTR), ethanol abuse, smoking status, renal function, liver disease, malignancy, antiplatelet therapy, last INR and complete blood count before index procedure, number of days warfarin and antiplatelet therapies were held prior to index procedure, use of bridging versus no bridging, dose of parenteral anticoagulant, number of parenteral anticoagulant doses prior to procedure, type and duration of procedure, procedural setting, time to first post-procedure anticoagulant dose and antiplatelet dose.

Results: (pending- research in progress)

Conclusion: (pending- research in progress)

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 12-097

Poster Title: Identifying risk factors of potentially preventable 30-day readmission among patients with a human immunodeficiency virus diagnosis

Primary Author: Gregory Hadlock, University of New Mexico Hospitals, NM; **Email:** ghadlock@salud.unm.edu

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Purpose: Healthcare costs have been growing at unsustainable rates for governments and healthcare systems. The 30-day readmission rate is a commonly used measure of hospital quality and is used by the Center for Medicare and Medicaid Services to adjust reimbursement rates of hospitals. Certain patient groups have higher rates of 30-day readmission, including patients with human immunodeficiency virus (HIV) infection. However, not all readmissions are preventable. The objective of this study is to determine the incidence and risk factors of potentially preventable readmissions (PPR) among HIV infected patients with a 30-day readmission at our institution.

Methods: This study will be a retrospective cohort study of HIV infected patients with a PPR and those without with a PPR from 1/1/2012 – 12/31/2014. Patients will be selected if they have an HIV diagnosis, were admitted to our institution for any cause, and were readmitted within 30 days of the index admission. PPR will be identified by chart review of electronic medical records. PPR will be defined as a readmission for a recurrence or continuation of the index admission reason, an acute decompensation of a chronic problem present at the index admission date, and a complication (including surgical) related to treatment received during the index admission. To determine risk factors of PPR, demographic, social, and clinical characteristics will be collected and analyzed using univariate and multivariate regression to assess an association with PPR. Two reviewers will assess for PPR. Discordant assessments of PPR will be evaluated by a third reviewer. Prior to data collection, this study will be submitted to the our Institutional Review Board for Approval. All patient data will be de-identified to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-099

Poster Title: Implementation of pharmacist led medication reconciliation and education in the emergency department; a pilot project at a small, Planetree community hospital

Primary Author: Diana Flounders, Alliance Community Hospital, OH; **Email:** dtopp@neomed.edu

Additional Author (s):
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Dustin Carneal

Purpose: Readmission rates for chronic diseases are elevated and it can be partially contributed to noncompliance or misunderstanding about medications. In addition, medication lists for patients may be incomplete or outdated compared to the patients' current regimen. Therefore, the objective of this study is to examine the effectiveness a pharmacist has on medication reconciliation and education in the Emergency Department (ED) by examining readmission rates at 30 and 90 days post initial visit.

Methods: This study has been submitted to the Institutional Review Board for approval. Upon patient admission to the ED, the pharmacist will complete a medication reconciliation with the patient and provide medication counseling. Upon conclusion of the visit, patients that are leaving with a new prescription or diagnosis of a chronic disease will be counseled by the pharmacist. In addition, the pharmacist will provide a follow up phone call for patients 48-72 business hours after the initial visit to review changes, answer questions, and reinforce education topics. Daily ED activity reports will be collected via the hospital's electronic medical record system (EMR), Meditech, to evaluate the patients the pharmacist was able to counsel and those patients that were either missed or were admitted to the ED when the pharmacist was not available. Readmission rates will be examined at 30 and 90 days post initial visit to examine if the patients that received counseling by the pharmacists had lower readmission rates compared to those patients that did not receive counseling. Other information that will be collected include the number of pharmacist interventions, number of patients that left the ED without being seen, number of Outcomes MTM™ opportunities for patients, age, number of

medications on admission, number of medications on discharge, and number of medications that are scheduled compared to as needed.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-100

Poster Title: Enhanced medication awareness in hospice patients through a medication perception survey and individualized patient and caregiver education: a pharmacist-led initiative.

Primary Author: Jennifer Ward, Alliance Community Hospital, OH; **Email:** jward@neomed.edu

Additional Author (s):
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Patrick Divoky

Purpose: Pharmacists are trained to provide effective symptom management through optimization of therapy while minimizing adverse effects to patients in all care settings. The objective of this study is to survey hospice patients and caregivers to provide individualized education for appropriate symptom control as symptoms progress during their hospice tenure. Education will focus on patient centered care strategies to enhance symptom control by empowering appropriate medication administration.

Methods: All patients enrolled in Alliance Community Hospice between November 1st and December 31st will be included in the survey regardless of terminal diagnosis, comorbid conditions, or location of hospice care. Information will be obtained through the electronic medical record. Specialized hospice nurses will be utilized to obtain consent as well as initial and follow-up medication related survey responses from patients and their caregivers. All data will be de-identified and contained within a secure location with the locked pharmacy department. The initial survey will ask the responders to evaluate their confidence in medication knowledge, their current symptom control and topics of concern regarding their care. A patient/caregiver meeting will be arranged by the pharmacist during which education will be given on all medications with an emphasis on patient or caregiver identified areas of concern and as needed medications. Any additional concerns identified by the pharmacist will be communicated to the hospice care team. Follow-up surveys will be sent at two and ten weeks following education to assess how perceptions and symptom control were impacted. Descriptive statistics will be used to evaluate changes in patient and caregiver medication perception. Secondary results will include a comparison of surveys in different hospice

locations, between caregivers and patients, as well as between initial administration and 10 week follow-up. All interventions made will be recorded.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-101

Poster Title: Analysis of a consult agreement in a federally qualified health center (FQHC): a pharmacist-physician approach to managing uncontrolled diabetes

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Purpose: The addition of a pharmacist to an interprofessional healthcare team can improve patient care and satisfaction. As of 08/31/2016, the Ohio revised code 4729.39 for consult agreements between physicians and pharmacists was revised. The revision permits pharmacists to expand their scope of practice and provide optimal patient care services in collaboration with physicians. The purpose of this study is to evaluate the successful implementation of a consult agreement within the family practice clinic of a newly developed FQHC. The primary outcome is patient and physician satisfaction following pharmacist-directed patient care.

Methods: This retrospective study will evaluate the integration of a pharmacist into the healthcare team in order to optimally manage diabetic patients. Care provided by the pharmacist will fall under the scope specified within the newly contracted consult agreement and occur during the months of November 2016 to March 2017. Inclusion criteria consist of age ≥ 18 years, type 2 diabetes mellitus, and a hemoglobin A1c ≥ 9%. The clinical pharmacist can modify diabetic therapy and order blood and urine tests as specified within the protocol section of the consult agreement. Each patient will be asked to complete a 10-item paper satisfaction survey evaluating the care provided by their clinical pharmacist. Physicians will also be requested to complete a 12-item assessment evaluating the service. Secondary outcomes will be measured by the number and types of interventions made by the pharmacist as well as clinical efficacy represented by A1C reduction. Other data collected will include: baseline demographics, medications, and co-morbid conditions. This study has been submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 12-102

Poster Title: Analysis of the incidence of hypoglycemia upon initiation of tramadol

Primary Author: Tiffany Kneuss, Aultman Hospital, OH; **Email:** tiffany.kneuss@aultman.com

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Purpose: The use of tramadol has steadily increased worldwide since its approval. While there are many well-studied safety concerns with tramadol such as risk of seizure, sedation, respiratory depression, and serotonin syndrome, tramadol continues to be perceived and utilized as a "safer" option than other opioid analgesics. In addition to known safety concerns, there are many lesser known safety concerns associated with tramadol including risk of hypoglycemia. The purpose of this study is to analyze the incidence of tramadol-induced hypoglycemia, including time to development of hypoglycemia, number of hypoglycemic events per patient, and severity of the blood glucose decrease.

Methods: A 24-month retrospective chart review will be performed comprised of patients receiving post-acute care between August 2014 and August 2016 in a rehabilitation and transitional care unit facility. Patients eligible for analysis include all patients 18 years of age and older with tramadol initiated within the last 30 days. Patients with and without diabetes and/or anti-diabetic medications will be included in analysis. Exclusion criteria include use of tramadol as a home medication (prescription within the last 6 months), inability to determine the initiation date of tramadol, concurrent codeine use, and use of the extended-release formulation of tramadol. Data will be collected via electronic medical records and will include age, sex, initiation date of tramadol, all blood glucose levels during post-acute care stay, number of hypoglycemic events per patient, number of tramadol doses received prior to hypoglycemic event, number of days since initiation of tramadol at time of hypoglycemic event, potentially confounding medical conditions and medications, and renal function based on a calculated creatinine clearance. The study protocol has been submitted to the Institutional Review Board (IRB) for approval.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-103

Poster Title: The ONESCOP study: effect of a neurohospitalist, stroke coordinator, and pharmacist (ONESCOP team) on acute ischemic stroke metrics and patient outcomes

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Additional Author (s):
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Purpose: As a primary stroke center, the institution relies on an interdisciplinary team to provide acute ischemic stroke care. During regular business hours, this team includes a neurohospitalist, stroke coordinator, and pharmacist (ONESCOP team). This project seeks to determine if the presence of the ONESCOP team impacts acute ischemic stroke metrics (time to treatment-critical events within the emergency department) and patient outcomes (length of stay, readmissions, mortality) when compared to off-hours stroke coverage. The primary outcomes are door to needle (alteplase (t-PA) administration) time and length of stay.

Methods: A retrospective chart review will be performed for all subjects presenting to the emergency department (ED) under a stroke alert from January 1, 2015 to August 31, 2016. In order to be included in data analysis, subjects must have an ED stroke alert activated and had an ischemic stroke. Subjects will be excluded if their stroke was hemorrhagic, symptoms were determined to be from a cause other than stroke, presentation was more than 4.5 hours since last known well, or tPA was administered before arrival. Data will be analyzed in two groups based on whether the full ONESCOP team participated in the acute stroke care of the subject. Analyzed data will include door to tPA decision time, time from completed computed tomography scan to tPA decision, number of eligible subjects who received tPA, number of tPA eligible subjects with documented refusal of consent, door to needle time, time from tPA decision to administration, 90 day mortality, time to mortality (within 90 days), 90 day stroke-related readmission, time to readmission (within 90 days), and length of stay. All data will be tested for normality, and the appropriate statistical tests will be used to determine if there is a difference in outcomes between subjects who received acute ischemic stroke care from the ONESCOP team and those treated by off-hours providers.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-104

Poster Title: Cost avoidance strategy with oritavancin

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Additional Author (s):
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Purpose: The objective of this study is to determine cost-avoidance, in dollars, 30-days post treatment using oritavancin in eligible patients with cellulitis administered in the emergency department (ED) against the average cost of admission for patients with cellulitis. Using cost-avoidance as an outcome allows real-world assessment of whether treating patients with oritavancin has reduced healthcare costs. By assessing if cost-avoidance was achieved with oritavancin, the potential exists to increase its utility in the outpatient setting and prevent healthcare spending.

Methods: This study was submitted to the Institutional Review Board for approval. Patients presenting to the emergency department (ED) will be categorized based on drug protocol to be eligible to receive oritavancin infusion. Patients identified as potential candidates by ED team and if insurance coverage is validated, patients may receive oritavancin if decision to treat is made. Primary outcome will be cost-avoidance. Secondary outcomes will measure admission rate, patient satisfaction, and reimbursement percentage from third-party payers. The following data will be collected from the electronic medical record: third party billing information, reimbursement decision/amount from third party, status of coverage, thirty-day admission data following infusion, age, race, sex, race, principle diagnosis, and laboratory reports. All data will be collected and de-identified, and private health information will be stored in a password protected document. The data will remain on an encrypted and secure laptop that will be in the possession of the PI. No other investigator will have full-access to patient information. Patients who received oritavancin will be followed-up to determine cost to patient and health system. Cost-avoidance will be determined by analyzing reimbursement versus previous year average cellulitis cost of admission.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-105

Poster Title: Impact of pharmaceutical bedside deliveries on 30 day readmission rates in a community hospital

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Additional Author (s):
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Purpose: Blanchard Valley Hospital offers counseling by a pharmacist prior to discharge. It has been a goal to counsel patients about their medications in order for the patient to be educated and understand their medications. The goal is to reduce complications with medications and improve patient compliance in order to reduce 30 day readmission rates. Limiting readmission is critical to the overall well-being of the patient and ensures reimbursement. The objective of this study is to evaluate the impact of pharmaceutical bedside deliveries on 30 day readmission rates as well as detecting additional benefits from this pharmacy delivery program.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify patients who have received medication bedside delivery counseling. The following data will be collected: patient age, disease state, admit date, bedside delivery participants, readmission date, location of stay within the hospital, and the medications on which the patient is discharged. The study will be conducted at a single center. It includes patients greater than or equal to 18 years of age, who participated in the bedside delivery program at Blanchard Valley Hospital located in Findlay, Ohio. The study will be looking at collected data from January 1, 2015 to December 31, 2016. Patients who were placed on the pediatric, labor and delivery floors, and surgery patients will be excluded. Patients discharged through the program only on pain medications and laxatives were also excluded. The primary outcome of this study consist of the pharmaceutical bedside delivery service impact on 30 day readmission rates. Secondary outcomes: types of medications delivered through the bedside delivery service, growth of the bedside delivery service, income the service brings to the

outpatient pharmacy, and trends in medication communication scores as reported through the Press Ganey Patient Survey.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 12-106

Poster Title: Implementation of a pharmacist driven oral chemotherapy counseling service in an outpatient cancer care center

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Purpose: As oral chemotherapy drugs are being used more frequently it is important that patients receive effective counseling in order to ensure they are able to use the drug in a safe and effective way. Patients who receive their oral chemotherapy from a mail order pharmacy or directly from a medical office often do not get the opportunity to speak to a pharmacist in person to address questions and concerns they may have regarding their oral chemotherapy. The purpose of this service is to provide patients with the opportunity to receive counseling by a pharmacists about their oral chemotherapy.

Methods: This study will be submitted to the Institutional Review Board for approval. This service will be offered to patients who are prescribed oral chemotherapy by their oncologist at Armes Family Cancer Care Center (AFCCC) in Findlay, Ohio. Both patients who have taken oral chemotherapy prior and those who are new to oral chemotherapy will be offered this service. A pharmacist will provide counseling to patients receiving oral chemotherapy via an outside pharmacy. Patient age, gender, diagnosis, time on oral chemotherapy, and oral chemotherapy agents prescribed will be assessed at baseline. Counseling sessions will last approximately 15 minutes and will include dosing, indication, storage, adverse effects and how to manage them. Patients will be given an opportunity to ask the pharmacists questions; the category of questions will be recorded. They will receive handouts that will summarize key information covered during the counseling session. Patients will be contacted for follow-up via telephone by the pharmacist who conducted the initial education 4 weeks after their initial oral chemotherapy counseling session. Information collected at follow-up will include effectiveness of counseling, patient compliance, frequency and management of adverse effects. Questions or concerns the patient may have at follow up will be addressed and the categories of questions

asked will be recorded. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-107

Poster Title: Management of refractory status epilepticus at a children's hospital

Primary Author: Melissa Kincaid, Cincinnati Children's Hospital Medical Center, OH; **Email:** melissa.kincaid@cchmc.org

Additional Author (s):
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Purpose: Midazolam and pentobarbital are commonly used as continuous infusion anesthetics for the management of refractory status epilepticus (RSE). While these agents provide effective seizure control, they are associated with several adverse effects, such as hypotension requiring vasoactive agents, respiratory depression, and infection, which may have a negative impact on morbidity and mortality. The purpose of this study is to describe the efficacy and safety of continuous pentobarbital and midazolam infusions for the management of RSE at a children's hospital.

Methods: This study is an Institutional Review Board-approved retrospective chart review evaluating patients who were admitted to a children's hospital for the management of RSE from January 2010 to December 2015. Patients who received midazolam and/or pentobarbital as continuous infusion anesthetics for the treatment of RSE will be identified using the electronic medical record. The primary objective of this study is to describe the efficacy of continuous infusion anesthetics as determined by the rate of successful resolution of RSE; successful resolution will be defined as either discontinuation of continuous infusion anesthetics or discharge from the intensive care unit to a non-intensive care unit. The secondary objectives are to assess the intensity of hemodynamic intervention required and the rates of adverse effects associated with the use of continuous infusion anesthetics. Data to be collected include baseline characteristics, RSE treatment utilized including continuous infusion anesthetics rate and duration, use of antiepileptic medications at time of RSE resolution, non-pharmacologic interventions and immunotherapy. The intensity of hemodynamic intervention required will be evaluated using data collected regarding the vasoactive agents used for

hemodynamic support. This data includes which agent was used, duration of vasoactive therapy, as well as maximum and average daily infusion rates. Adverse effects including ileus, bloodstream infections, ventilator-associated pneumonia and acute kidney injury will also be collected.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 12-108

Poster Title: Efficacy of capped rasburicase dosing for management of tumor lysis syndrome in oncology patients at a pediatric institution

Primary Author: Arathi Lambrix, Cincinnati Children's Hospital Medical Center, OH; **Email:** arathi.pillay@cchmc.org

Additional Author (s):
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Purpose: Rasburicase is a recombinant urate-oxidase inhibitor indicated for management of hyperuricemia associated with tumor lysis syndrome (TLS). A single fixed dose of rasburicase has shown to effectively normalize uric acid levels in adult patients experiencing TLS. Due to the high cost associated with rasburicase therapy, an institutional guideline for capping and rounding down rasburicase doses has been implemented at a pediatric institution. This retrospective review will evaluate the efficacy of capped and rounded doses, as well as the associated cost savings.

Methods: This retrospective chart review was approved by the Institutional Review Board to evaluate oncology patients who received rasburicase between December 1, 2014 and September 1, 2016. Patients will be identified by the electronic medical record and included if diagnosed with an oncologic malignancy requiring rasburicase for TLS management. The primary objective of the study is to evaluate the efficacy of capped or rounded doses of rasburicase in normalizing uric acid levels. The study will evaluate rates of repeat rasburicase dosing, rates of acute kidney injury, prescribing patterns and associated cost savings. Data to be collected includes serum uric acid, potassium, phosphate, creatinine, total white blood cells, and the rasburicase doses administered. Cost savings will consider both the dose administered and any drug wasted. Descriptive statistics will be used to characterize data regarding rasburicase efficacy and to evaluate cost savings and prescribing adherence. We hypothesize that a capped dose of rasburicase is efficacious in normalizing uric acid levels for the management of TLS in oncology patients.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-109

Poster Title: Chloral hydrate utilization in a pediatric medical center

Primary Author: Maria Sellas, Cincinnati Children's Hospital Medical Center, OH; **Email:** msellas15@gmail.com

Additional Author (s):
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Purpose: Chloral hydrate is a sedative hypnotic agent that has been utilized for centuries. Despite its widespread and historical use, chloral hydrate is not currently approved by the United States Food and Drug Administration. However, institutions are able to compound chloral hydrate preparations for use. Current dosing guidelines recommend a maximum daily dose of 2,000 mg in pediatric patients. The objective of this evaluation is to assess the rates and outcomes of patients who receive total daily doses of chloral hydrate greater than the recommended 2,000 mg.

Methods: This is a quality improvement drug utilization evaluation conducted at a tertiary care pediatric medical center. Patients with orders for chloral hydrate from August 2015 – August 2016 will be identified utilizing the electronic medical record. The orders for chloral hydrate will be evaluated for total single dose, potential maximum cumulative dose in 24 hours, and total dose administered to the patient in 24 hours. Vital signs, including heart rate, systolic blood pressure, respiratory rate, and oxygen saturation, will be collected on those patients who received doses greater than 2,000 mg. A cost analysis of chloral hydrate will be completed. Following analysis of the data, strategies for prevention of exceeding the recommended dosing will be evaluated and recommended to the institution for implementation.

Results: n/a

Conclusion: n/a

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 12-110

Poster Title: Developing an operational productivity tool within an academic cancer treatment center

Primary Author: Thomas Achey, Cleveland Clinic, OH; **Email:** tom.achey@gmail.com

Additional Author (s):
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Purpose: Benchmarking is a method for comparison to determine the value and effectiveness of pharmacy services. The Cleveland Clinic Department of Pharmacy measures dispenses, interventions, order verification, and automated drug cabinet refills. The department does not have an optimal infusion center operational productivity tool. Workflow throughout the department is not generalizable; therefore, it cannot accurately assess mixed skill workload – pharmacists and technicians alike – currently. Traditional productivity metrics (e.g. doses dispensed, admissions, patient days, revenue) are nonexistent or provide too little detail within this setting. Of the aforementioned metrics, dispenses are most universal to apply within the ambulatory infusion setting.

Methods: Data was electronically captured based on orders processed through the ambulatory oncology setting including hazardous and non-hazardous medications. Based on current workflow, inpatient and outpatient orders (both processed within the 'chemo pharmacy') were reviewed in productivity metrics. The metric defining the variability of the workload itself was weighted dispense type as it was the best representation of a mixed skill workflow. After conducting workflow process mapping, discrete measurable steps were assessed and evaluated within the day-to-day operations. Operational components of interest included pharmacist verification activities and technician compounding activities. Production data from September 1, 2014 – August 31, 2015 was sampled for assigning relative value units (RVU) respective to time to normalize workload into a common unit (i.e. one hour) and to relate work demand in a highly variable setting (e.g. chemotherapy infusion center). RVUs were assigned and delineated by cognitive and distributive activities for pharmacists and technicians, respectively. In addition to data from September 2015 – August 2016, the Delphi method will be utilized to verify

assigned RVUs. The intent of this research-in-progress is to develop a productivity tool to retrospectively measure workload involving time to review, verify, reconstitute, admix, and deliver chemotherapeutic agents.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-111

Poster Title: Evaluation of an electrolyte replacement protocol in critically ill patients at a community hospital

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Additional Author (s):
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Purpose: Electrolyte imbalances in critically ill patients have been positively correlated with increased morbidity and mortality. Although the use of electrolyte correction protocols has become more common in critical care settings, minimal data exists pertaining to the safety and efficacy of these protocols. Recently, Cleveland Clinic Medina Hospital has developed a nursing-driven electrolyte replacement protocol for patients in the intensive care unit (ICU), which targets hypokalemia, hypomagnesaemia, and hypophosphatemia. This study will evaluate the safety and efficacy of the new protocol.

Methods: This retrospective chart review will consist of inpatients at Cleveland Clinic Medina Hospital admitted to the intensive care unit between April 1, 2015 through October 31, 2015 (pre-protocol period) and April 1, 2016 through October 31, 2016 (post-protocol period). Patients at least 18 years old who received electrolyte replacement during the pre-protocol period, and received electrolyte replacement from the protocol order set in the post-protocol period, will be included. Per protocol, patients who experienced the following during ICU stay will be excluded: serum creatinine greater than 2 milligrams per deciliter, dialysis, rhabdomyolysis, diabetic ketoacidosis, anuria, or weight less than 40 kilograms. The primary efficacy outcome will be to compare the proportion of measured values of serum potassium concentration within the desired range (3.5 to 5.0 milliequivalents per liter) the morning after potassium replacement during the pre-protocol period versus the post-protocol period. Secondary outcomes will include assessment of magnesium and phosphate concentrations the morning after replacement, the average time to replacement, the incidence of cardiac arrhythmias during ICU admission, in-hospital mortality, as well as nurse and physician

satisfaction measured with an anonymous survey. Chi-squared and Student t-test will be utilized in the statistical analysis, as appropriate.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-112

Poster Title: Impact of pharmacist-driven post-discharge medication reconciliation on 30-day readmission rates: a retrospective chart review.

Primary Author: Meredith Martin, Cleveland Clinic Medina Hospital, OH; **Email:** martinm4@ccf.org

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Purpose: Medication discrepancies have the potential to prolong hospital length of stay and lead to increased utilization of other healthcare resources, including increased emergency department visits and hospital readmissions. Medicare readmissions within thirty days of discharge have been estimated to cost approximately $17.4 billion a year, which represents substantial implications for both patients and the entire health care system. The objective of this study is to determine the impact on 30-day readmission rates from pharmacist-led post-discharge medication reconciliations.

Methods: This study is a randomized, retrospective chart review of patients discharged from Cleveland Clinic Medina Hospital to skilled nursing facilities (SNFs) and long term acute care facilities (LTACs). The primary outcome is readmission to a Cleveland Clinic inpatient facility within thirty days of discharge. Secondary outcomes include number and type of medication discrepancies, drug interactions, interventions requiring physician contact, and average time of phone call. Daily discharge reports will be evaluated to identify patients discharged to SNFs and LTACs. All patients discharged to a SNF or LTAC will be randomized equally into two groups: patients who will receive post-discharge medication reconciliation and patients who will not. The nursing facility will be contacted to conduct a medication reconciliation within three days of discharge for those patients randomized into the intervention group. The following baseline data will be collected from the electronic medical record: patient age, gender, number of scheduled medications, length of stay, and primary discharge diagnosis. The number of medication discrepancies, drug interactions, interventions requiring physician contact, and length of the phone call will be documented. A medical record review will be completed to

determine readmission rate to a Cleveland Clinic inpatient facility within thirty days of discharge. All data will be recorded in a secure database to maintain patient confidentiality. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-113

Poster Title: Valproic acid induced hyperammonemia: Incidence, clinical significance, and treatment management

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Purpose: Valproic acid induced hyperammonemia poses several clinical challenges in psychiatric medicine. The reported incidence of this adverse effect varies widely across the literature. Furthermore, many practitioners order ammonia levels and treat hyperammonemia in asymptomatic patients although studies suggest this practice is unnecessary and can lead to diagnostic confusion. The purpose of this study is to evaluate the clinical implications of monitoring ammonia levels in potentially asymptomatic patients.

Methods: This study will be submitted to the Institutional Review Board for approval. The primary objective is to determine the incidence of hyperammonemia in psychiatric patients on valproic acid with at least one ammonia level drawn during admission. The secondary objectives are to evaluate the incidence of symptomatic hyperammonemia and to evaluate the incidence and efficacy of various treatments for hyperammonemia. Patients will be retrospectively identified through a database query from June 2011 to June 2016. Patients will be included if they were admitted to a psychiatric unit, received at least one dose of valproic acid, and had at least one ammonia level drawn during admission. Exclusion criteria include a diagnosis of cirrhosis at admission. Data will be extracted from a shared electronic medical record and uploaded into a secured collection database. Collected data points will include demographic information, diagnosis, symptoms of hyperammonemia, ammonia levels drawn during admission, and treatment modality chosen. Hyperammonemia will be defined as greater than 47 micromoles per liter. Symptomatic hyperammonemia will be defined based on symptoms, such as lethargy and altered mental status. Only patients with multiple ammonia levels drawn will be used to assess efficacy of treatment modalities. The ammonia levels will be trended during admission, and the treatment modality will be deemed successful if the ammonia level was within normal range (17 to 47 micromoles per liter) at discharge.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-114

Poster Title: Dosing of enoxaparin in morbidly obese individuals: A retrospective cohort

Primary Author: Michael Czupryn, Fairview Hospital, OH; **Email:** czuprym@ccf.org

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Purpose: Studies investigating the pharmacokinetics of non-standard doses of enoxaparin in a morbidly obese population have had mixed results, and there is a paucity of evidence analyzing thrombosis and bleeding risk in this population. The primary objective of this study is to evaluate incidence and risk of major bleeding between different enoxaparin dosage strategies in patients weighing greater than or equal to 120 kilograms receiving treatment doses of enoxaparin.

Methods: This study will be submitted to the Institutional Review Board for approval and will be completed using patient electronic medical records from a shared medical record system for all hospitals within the health system. Patient data will be extracted for three community hospitals from the past five years. Patients will be included in the primary analysis if they received enoxaparin with the intent of full anticoagulation for more than 24 hours, weighed greater than or equal to 120 kilograms at the time of treatment, and had outcomes data documented throughout the course of therapy. Data will be collected for patients with a creatinine clearance less than 30 milliliters per minute (including dialysis patients) and pregnant patients for the purposes of an ad-hoc subgroup analysis, but this data will be excluded from the primary analysis. Patients less than 18 years of age, patients with no creatinine or weight data, and patients with documented heparin induced thrombocytopenia will be excluded. The incidence of primary outcomes occurring within seven days of therapy will be compared between patients receiving an enoxaparin dose less than 0.9 milligrams per kilogram twice daily and greater than or equal to 0.9 milligrams per kilogram twice daily and also between patients weighing greater than or equal to 150 kilograms and less than 150 kilograms.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-115

Poster Title: Reducing readmissions through pharmacist-led chronic obstructive pulmonary disease (COPD) education at a rural, community hospital

Primary Author: Kyle Weslosky, Firelands Regional Medical Center, OH; **Email:** kyle.weslosky@firelands.com

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Purpose: Centers for Medicare and Medicaid Services (CMS) expanded their Hospital Readmissions Reduction Program (HRRP) in 2015 to include chronic obstructive pulmonary disease (COPD). Consequently, hospitals can be penalized up to 3% for high thirty-day readmission rates for Medicare beneficiaries, by CMS standards, with a diagnosis of COPD, further incentivizing hospitals to focus on implementation of programs to decrease readmissions. The goal of this study is to reduce the thirty-day readmission rates of patients with COPD through pharmacist-led education about COPD.

Methods: The study will be submitted to an institutional review board for approval. Thirty-day all-cause readmission rates for the COPD patients enrolled in the study will be compared to the national average. Upon discharge from the hospital and referral to the Firelands Regional Medical Center (FRMC) Center for Coordinated Care (FCCC), patients will be identified for inclusion in the study if they meet the following criteria: patients with primary discharge diagnosis of COPD, COPD exacerbation, or primary discharge diagnosis of respiratory failure with a secondary diagnosis of COPD, and enrollment in Medicaid or Medicare for at least thirty days post-discharge. Exclusion criteria will include: under 18 years old, learning disabilities, primary language other than English, patients discharged against medical advice (AMA), transferred to another acute care facility, discharged to long-term care facilities, those to receive home health care, and patients with planned readmissions according to the CMS algorithm. Patients meeting inclusion criteria will be assigned to receive usual care through FCCC alone or in combination with pharmacist-led COPD education within fourteen days of

discharge. The primary outcome to be measured is thirty-day readmission rates of COPD. Secondary outcomes include: pre- and post-test scores regarding COPD disease and medication knowledge, patient satisfaction survey scores, ninety-day readmission rates compared to the national average, and comparison to FRMC COPD readmission rates from the year prior to study implementation.

Results: To be determined.

Conclusion: To be determined.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-116

Poster Title: Implementing a pharmacy-led medication reconciliation program for patients in a rural, community hospital emergency department

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Purpose: Medication reconciliation is an interactive process with patients in which the most accurate medication list is obtained with the intent to optimize pharmaceutical care and reduce medication errors. Providers face many challenges when trying to complete medication reconciliations including patients' knowledge of medications as well as time limitations. Devoting one person, such as a trained pharmacy technician, to the role of documenting accurate medication histories can eliminate redundant efforts and save clinicians time. After completion of this study, the hospital hopes to devote a pharmacy technician to perform medication reconciliations in the emergency department (ED).

Methods: This study will be submitted to an institutional review board for approval. Prospective review will include tracking the time spent and medication reconciliations completed for selected patients in the emergency department during peak admission times. This data will be used to assess the efficiency of completing medication reconciliation by pharmacists and pharmacy interns and the consequent reduction of nursing time. Conducting this research will also help with development of a standard process to train and implement pharmacy technician involvement in medication reconciliation. Patients will be identified in the ED by the triage level and selected if they are likely to be admitted. Exclusion criteria will include patients that will not be admitted. Patients meeting inclusion criteria will have their medication reconciliation performed by either a pharmacist or pharmacy intern. Through literature search, standards will be established regarding what should be documented on a patient's home medication list on admission with a goal to compile the most accurate

medication list and improve patient safety. The primary outcome measured will be efficiency at which medication reconciliation can be completed by pharmacy staff. Secondary outcomes that will be measured include a cost analysis of implementing a pharmacy technician to conduct medication reconciliation and assessing improvement in accuracy and completeness comparing current practice to post implementation of pharmacy involvement.

Results: To be determined.

Conclusion: To be determined.

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-117

Poster Title: Retrospective evaluation of proton pump inhibitor appropriateness within a small teaching hospital

Primary Author: Matthew Walker, Grandview Medical Center, OH; **Email:** matthew.walker@khnetwork.org

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Purpose: Recent literature suggests an association between proton pump inhibitor (PPI) use and serious adverse effects such as increased risk for infection (pneumonia, clostridium difficile diarrhea), vitamin deficiencies, and myocardial infarction. In addition, inappropriate prescribing patterns for PPIs have been identified with nearly two-thirds of PPIs prescribed in many studies having no clear indication. The objective of this study is to assess the prescribing patterns for PPIs at a small teaching hospital and to gauge how effective pharmacy interventions are in limiting PPI use in accordance with acceptable guidelines.

Methods: This study is submitted to the local Institutional Review Board for approval. The electronic medical record system (EPIC) through a willow report will be used to identify all patients ≥18 years old admitted to Grandview Medical Center after July 1, 2015 who are either newly started on a PPI or continued from an outpatient setting. A thorough chart review will be conducted to assess the appropriateness of the patient's PPI therapy, by first looking at and collecting factors such as: Indication, prior to admission medications, concurrent medications, age, admitting diagnosis, past medical history, ventilator status/days, length of stay, patient clinical status and lab values specifically INR, PTT, and platelets. The appropriateness of PPI therapy is then determined by comparing these factors to FDA approved indications, and current evidence-based literature. Both appropriate and inappropriate prescribing data will be collected. All data will be recorded without patient identifiers and kept confidential.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Descriptive Report

Session-Board Number: 12-118

Poster Title: Analysis on the efficacy of intravenous versus oral antibiotic therapy in intravenous drug abusers with Staphylococcus aureus bacteremia

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Purpose: While the incidence of illicit intravenous drug abuse is on the rise in the United States, an increased number of patients are presenting to hospitals with Staphylococcus aureus bacteremia with potential development into life-threatening endocarditis. Few studies have analyzed the success of oral antibiotic regimens in managing these infections at the time of discharge. The purpose of this study is to evaluate treatment success through analysis of the reinfection and readmission rates of intravenous versus oral outpatient antibiotic therapy in active drug abusers presenting to Grandview Medical Center with Staphylococcus aureus bacteremia.

Methods: This study will be submitted to the Kettering Health Network IRB board for approval. A retrospective search using EPIC software program will be performed to identify active drug abusers admitted to Grandview Medical Center from January 1, 2015 through December 31, 2016. Patients will be included in our study if two positive blood culture results of Staphylococcus aureus bacteremia are confirmed with or without endocarditis diagnosis. Personal health information will be delineated for each patient, and baseline characteristics such as age, sex, weight, and comorbid conditions will be recorded in a Microsoft Excel file that will only be accessible on Grandview's campus. Along with baseline characteristics, patient's culture results, antibiotic regimens, and therapy duration will be recorded. A follow-up chart review through Kettering Health Network will occur at ninety days from discharge to determine if these patients were readmitted to any of the network hospitals for Staphylococcus aureus bacteremia or endocarditis. An attempt will be made to contact the patient individually to determine if his or her oral antibiotic therapy was successful or if reinfection did occur. Results from the chart analysis and patient communication will then be recorded and analyzed. Cure rates for oral therapy will be calculated and compared to those for patients discharged on

intravenous therapy. The results of the study will then be released once the study is complete and finalized.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-119

Poster Title: A comparison of the safety and efficacy of facilitated intubation (without paralytics) and rapid sequence intubation (with paralytics)

Primary Author: Taylor Roberson, Grant Medical Center (OhioHealth), OH; **Email:** taylor.roberson@ohiohealth.com

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Purpose: Rapid sequence intubation (RSI) involves administration of induction agents and neuromuscular blocking agents (NMBA). An alternative method of intubation called facilitated intubation (FI) does not utilize NMBAs. Advantages exist in performing RSI, including blunting physiologic response to laryngoscopy and impairing reflexes to prevent aspiration. However, using NMBA comes with risk because protective reflexes are removed, a concern in difficult airways due to potential for "can't intubate, can't ventilate" situations. Therefore, some practitioners elect to perform FI, allowing risk for aspiration and laryngospasm. The interest of this study is to compare safety and efficacy of RSI and FI at this institution.

Methods: This study will be submitted to the Institutional Review Board for approval. The proposed study is a retrospective, single-center chart review evaluating adult patients who underwent intubation for acute respiratory failure or inability to protect the airway at OhioHealth Grant Medical Center. I will examine the safety and efficacy of two types of intubation: rapid sequence intubation (RSI) utilizing neuromuscular blockade (NMB) and facilitated intubation (FI) without the utilization of NMB. The primary endpoint is to examine the unadjusted incidence of cumulative adverse events (such as more than one intubation attempt, traumatic intubation, aspiration, progression to airway emergency) associated with RSI and FI, overall and by provider type. Secondary analyses will include an attempt to identify contributing features affecting adverse event rates, such as patient demographics/co-morbid conditions or provider type. Additionally, we will describe the in-hospital mortality, length of stay, service line, provider type, pharmacist participation, intubation indications and number of first attempt intubations. Patient data will be collected via electronic medical records at my

institution. Other data to be collected includes: patient age, gender, weight, medications utilized, and medication doses.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-120

Poster Title: Implementation of a multifaceted pharmacy-led medical education to reduce asymptomatic bacteriuria treatment rates within an emergency department

Primary Author: Dan James, Grant Medical Center (OhioHealth), OH; **Email:** daniel.james@ohiohealth.com

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Purpose: Asymptomatic bacteriuria (ABU) is a common occurrence that represents colonization as opposed to infection yet is often inappropriately treated with antibiotics. This inappropriate treatment frequently begins within the Emergency Department (ED) as a reaction to an abnormal urinalysis (UA) which is often subsequently continued as an inpatient regimen. The unnecessary use of antibiotics leads to an increased risk for multidrug resistant bacteria, Clostridium difficile infection, and avoidable healthcare costs. Thus the purpose of this quality improvement project was to evaluate the effects that a pharmacy-driven multifaceted educational intervention has on the rates of inappropriately treated ABU within a single-center ED.

Methods: We are conducting an educational quality improvement project at a single-center ED to reduce the rates of inappropriately treated ABU. The targeted audience for this education includes ED nurses, midlevel practitioners, and physicians. The education will consist of two components: an algorithm for appropriately evaluating an abnormal UA and an informative handout on ABU. The handout and algorithm will be communicated to the targeted audience using three different approaches: in-person discussions, emails, and general distribution within the ED. The education will be pharmacy-led but will be in collaboration with antimicrobial stewardship and ED personnel. This education will be implemented over a time period of one month. In order to evaluate the effectiveness of this quality initiative we will determine the pre- and post-intervention rates of inappropriate treatments through a retrospective chart review. Patients who were ordered prespecified antibiotics for a urinary tract infection (UTI) indication within the ED who had an abnormal UA will be included. Patients will then be filtered according to the presence or absence of documented UTI signs or symptoms. If UTI signs or symptoms are not documented, the patient will be recorded as having ABU and being inappropriately treated

with an antibiotic regimen. The primary outcome will be the difference in the frequency of inappropriately treated ABU after implementation of the educational intervention as compared to before implementation.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Evaluative Study

Session-Board Number: 12-121

Poster Title: Pharmacists' Evaluation of Apixaban Dosing for Atrial Fibrillation

Primary Author: Matthew Delisle, Hillcrest Hospital, OH; **Email:** delislm@ccf.org

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Purpose: Apixaban, a direct oral anticoagulant (DOACS), has a different dosing regimen for each of its FDA indications, which can lead to potential dosing errors. The primary objective of this study was to identify the incidence of pharmacist documented interventions and appropriateness of pharmacist assessments for apixaban prescribed orders pertaining to atrial fibrillation. Secondary objectives include the following: (1) utilization of the order panel with the correct indication and dose; (2) the incidence of pharmacist led apixaban education to patients; and (3) prescriber adherence to apixaban dosing guidelines.

Methods: A retrospective chart review of 100 patients receiving apixaban in a 500-bed community hospital from January 2016 to May 2016. Inclusion criteria consisted of patients admitted to the hospital receiving apixaban for atrial fibrillation. Patients that received apixaban for other indications were excluded. Patients that received apixaban for atrial fibrillation were identified using a report generated from electronic medical records. Twenty patients per month were randomly chosen during the specified timeframe. Number of pharmacists' renal function interventions were recorded for patients receiving apixaban. The criteria for an accurate apixaban dosing assessment was a pharmacist intervention for renal function assessment and an apixaban dose correction, if the dose was incorrect. Incidence of pharmacist led education and the effectiveness of the apixaban ordering panel were also analyzed. Institutional review board was obtained prior to conducting the study and descriptive statistics were used to analyze the data.

Results: The baseline demographics of the patients in this study included the following: median age 79 years; patient age over the age of 75 (66%); median weight (75.7 kg); prior TIA (17%); heart failure (22%); diabetes (29%); hypertension (88%); mean CHADS2 (2.4); CHADS2 score 1 (21%); CHADS2 score 2 (35%); CHADS2 score ≥3 (42%); and CHADS2-VASc (4.26). The apixaban

5mg was ordered for 65 patients, while the apixaban 2.5mg dose was ordered for 35 patients. The primary objective of pharmacist documented interventions was 82% and appropriateness of pharmacist interventions was 78%. The incidence of pharmacist documented interventions for new apixaban orders was 74%. The results of the secondary objectives are the following: utilization of the order panel with the correct indication and dose (98%); incidence of pharmacist led apixaban education to patients (62%); and the prescriber adherence to apixaban dosing guidelines (90%). When an incorrect order occurred in the study, pharmacists changed the apixaban dose according to protocol 30% of the time and followed up with a physician 10% of the time to verify a dose. A pharmacist missed an intervention 60% of the time when the order was incorrect.

Conclusion: Overall, pharmacists were successful in documenting renal dose interventions and making the correct decision regarding the prescribed apixaban dose. For patients with atrial fibrillation, utilization of the apixaban ordering panel was an effective tool for selecting the appropriate dose by providers.

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Evaluative Study

Session-Board Number: 12-122

Poster Title: Evaluation of aztreonam utilization at a large community teaching hospital.

Primary Author: Kim Walker, Hillcrest Hospital, OH; **Email:** walkerk4@ccf.org

Additional Author (s):
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Purpose: The purpose of this study was to identify potential opportunities for improvement in aztreonam utilization. Aztreonam was recently added to several new order sets at our institution, and we wanted to retrospectively review its use. The primary objective assessed patients that received aztreonam for a documented penicillin or beta-lactam allergy, a history of penicillin or beta-lactam tolerance, and the duration of aztreonam use.

Methods: Evaluation included all patients admitted to Hillcrest hospital between January 1, 2015 and June 22, 2016 who were at least 18 years of age and received at least one dose of aztreonam during the admission. Descriptive statistics were used to evaluate the primary objective as well as multiple secondary objectives. Secondary objectives included the distribution of aztreonam orders by provider type, infectious disease consultation during admission, the proportion of patients without documented penicillin or beta-lactam allergies, and the proportion of patients with a documented history of penicillin or beta-lactam tolerance. Encounters were assessed by chart review in the Epic electronic medical record. Collected variables included reported allergies, antibiotic use history, chief complaint, admission diagnosis, culture data, and all antibiotics administered during the encounter. All patient information was de-identified prior to analysis. IRB approval was obtained for this study.

Results: One hundred and thirty four encounters met the inclusion criteria for the time period. Of these, three patients received aztreonam without a previously documented history of penicillin or beta-lactam allergy. Ninety-seven patients had a previously documented history of penicillin or beta-lactam tolerance or received a penicillin or beta-lactam during the admission. Of the remaining 34 patients, 18 received aztreonam for less than 24 hours and two eventually had microbiological results that would not have been treatable with aztreonam. Final review suggests initial prescribing could potentially be modified in 89% of these patients. Infectious

disease was consulted in 66.4 percent of encounters with aztreonam discontinued in 87.6 percent of those instances. Of the 44 positive cultures in the study group, 17 were gram-negative organisms that may have been treatable with aztreonam.

Conclusion: Evaluation of the use of aztreonam over an 18 month period shows that 89 percent of aztreonam orders were for patients who did not have a penicillin or beta-lactam allergy, had documented tolerance to penicillin or beta-lactams, or continued for less than 24 hours of treatment. The findings indicate an opportunity may exist to improve the utilization of aztreonam within our institution.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-123

Poster Title: Comparison of Clostridium difficile infection (CDI) rates in antimicrobial regimens for diverticulitis

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Additional Author (s):
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Purpose: Clostridium difficile infection (CDI) is one of the most costly yet preventable nosocomial infections and has potential for substantial morbidity and mortality. In 2017, CDI rates will negatively impact an institution's Medicare reimbursement, adding an even greater impetus for CDI prevention. The objective of this study is to assess the CDI incidence related to diverticulitis treatment in regimens containing metronidazole versus those without and evaluate the clinical relevance of antimicrobial selection.

Methods: This retrospective chart review will be submitted to the Kettering Health Network (KHN) Institutional Review Board (IRB). Using the appropriate ICD-9 and ICD-10 codes, the electronic medical record will be used to identify patients who received at least 48 hours of antimicrobials for diverticulitis. The following data will be collected: patient age, gender, antimicrobial agent(s) used, dosage, duration of therapy, Clostridium difficile polymerase chain reaction (PCR) results, blood pressure, temperature, heart rate, complete blood count (CBC), diagnostic imaging, length of stay, nursing unit location, surgical and/or infectious disease consultation with or without intervention, use and duration of vasopressors, and 30-day readmission, if applicable. Provider documentation will be assessed to determine appropriateness of inpatient and discharge antimicrobial selection as well as appropriate treatment of CDI when it occurred according to the Infectious Diseases Society of America (IDSA) treatment guidelines. All data will be collected and de-identified to maintain patient confidentiality. CDI rates will be compared between regimens containing metronidazole and those without. The clinical impact of CDI will be assessed through length of stay, the need for

vasopressor support, transfer to an intensive care unit, or necessity of surgical intervention. Analysis will be conducted using descriptive statistics, unpaired t-tests for parametric data or continuous variables, Mann-Whitney-U for nonparametric variables, and chi-squared for binary variables.

Results: Not applicable

Conclusion: Not applicable

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-124

Poster Title: Retrospective analysis of antimicrobial selection and timing for treatment of febrile neutropenia

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Additional Author (s):
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Purpose: This study was designed to assess adherence to current Infectious Disease Society of American guidelines regarding appropriate selection and timing of antimicrobial agents for treatment of febrile neutropenia and its impact on patient outcomes. IDSA febrile neutropenia treatment guidelines emphasize the importance of proper selection and timely administration of antimicrobial agents for improved outcomes in this patient population. An additional purpose of this study is to determine possible risk factors for inappropriate treatment of febrile neutropenia, defined as deviation from current IDSA guideline recommendations.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will distinguish patients with a diagnosis of febrile neutropenia with or without a documented temperature greater than or equal to 38 degrees Celsius (100.4 degrees Fahrenheit). Prior to submission, patient identifiers will be removed from data to preserve confidentiality.
Patient-specific data to be collected include: age, weight, gender, serum creatinine, complete blood count with differential, absolute neutrophil count, reported and measured temperatures, time of initial fever, cancer diagnosis and central line access. Admission-related data to be gathered: hospital admission time and type (via emergency department or direct admission), presence of infectious disease physician consult and admitting physician specialty. Treatment-specific data to be obtained include: antimicrobial, antipyretic and colony stimulating factor medications received and specific administration times, antimicrobial agent order priority, timing, verification and administration, type, timing and results of microbiologic cultures drawn.

Estimated creatinine clearance will be calculated using the Cockcroft-Gault formula. Time intervals between admission, initial fever, antimicrobial order, order verification and antimicrobial administration will be calculated.
Physician documentation and treatment course will be analyzed for proper selection and timely administration of antimicrobial agents. Microbiologic culture results and temperature readings will be evaluated to determine if proper escalation and de-escalation of therapy occurred. Treatment courses will be categorized as “adherent” or “non-adherent” based on IDSA treatment guidelines.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-125

Poster Title: Effect of patient medication counseling by a pharmacist at hospital discharge on patient satisfaction survey results in a community hospital setting

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Additional Author (s):
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Purpose: Hospital pharmacists are beginning to provide patient discharge counseling as a way to improve patient satisfaction, lower readmission rates, and improve medication adherence in the transitions of care. Many hospitals utilize the Centers for Medicare and Medicaid Services (CMS) Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) survey in order to assess patient satisfaction. The purpose of this study is to determine the effect that medication counseling by a pharmacist prior to discharge has on the results of the medication-related questions in the CMS HCAHPS survey scores on the cardiac stepdown unit.

Methods: The study will be submitted to IRB for approval. It is a historical control, interventional study with retrospective and prospective review of CMS HCAHPS scores for medication-related questions. The first intervention will be a continuation of the current process of a pharmacist performing medication reconciliation at discharge. The second will be an intervention to provide medication discharge counseling to patients on the cardiac stepdown unit. Areas addressed will include which prior medications should be continued and which should be stopped, as well as which medications are new and their indication. This reviewed list will be provided to the patient for reference. Inclusion criteria for the study are patients 18 years of age or older who speak English and are being discharged from the stepdown unit to return home or to an assisted living facility in which the patient will manage his/her own medications. Patients will be excluded if they are pregnant/breastfeeding, are being discharged to hospice/nursing home where they will not manage their own medications, or if they are being transferred to a tertiary care center. The primary outcome is CMS HCAHPS survey results on the cardiac stepdown unit. A paired t-test will be used to analyze the pre-post HCAHPS results. Descriptive statistics will be used to analyze demographic data and medication interventions. A power calculation determined a sample size of 35 per group.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-126

Poster Title: Impact of utilizing rapid pathogen identification with pharmacist intervention on time to appropriate antimicrobial agents

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Karen Kier

Purpose: Mortality is higher for patients with bloodstream infections that receive inadequate initial antimicrobial therapy. Current laboratory practices for incubation, identification, and obtaining sensitivity results of offending organisms can take 3-5 days or longer. The latest Infectious Disease Society of America guidelines recommend the use of rapid diagnostic testing along with the intervention of antimicrobial stewardship programs. The objective of the study is to determine if pharmacist intervention with real-time results from rapid identification of microbes from positive blood cultures decreases the time to appropriate antimicrobial agents.

Methods: This is a historical controlled, multi-phase, interventional study. The primary outcome will be the time in hours to appropriate antimicrobial agents. Other outcomes to be measured include overall days of therapy, length of stay, days of broad-spectrum antimicrobials given, and recommendations accepted. Three comparator arms of patients with positive blood cultures will be included in the study. Group one will include patients prior to implementation of rapid diagnostic testing, group two will include patients after implementation, and group three will include patients after implementation plus pharmacist intervention. The Biofire FilmArray® (Biofire Diagnositcs; Salt Lake City, Utah) blood culture identification (BCID) panel will be used by hospital laboratory services to identify the pathogens isolated from blood cultures. Pharmacists will be alerted of positive BCID panel results in real-time. Data to be collected includes name, age, creatinine clearance, white blood cell count, temperature, drug allergies, antimicrobials regimen, and microbiology results. All personal identifiers will be saved on secure network computers and eliminated before sending data to other investigators. Treatment algorithms will be created for the pathogens that can be identified by the BCID panel. Inferential parametric statistics (ANOVA) will be used for continuous data while

nonparametric statistics will be used to analyze categorical data. A power calculation identified a sample size of 35 per group. This study will be submitted for IRB approval.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Descriptive Report

Session-Board Number: 12-127

Poster Title: Establishing a long-acting injectable antipsychotic clinic at a community hospital

Primary Author: Tuan Trinh, Lutheran Hospital-Cleveland Clinic, OH; **Email:** trinht2@ccf.org

Additional Author (s):
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Purpose: Long-acting injectable (LAI) antipsychotics have demonstrated clinical benefits in the treatment of psychiatric patients, including reducing risk of relapse and re-hospitalization. These clinical benefits are especially important for schizophrenic patients because of their low medication adherence and high rate of re-hospitalization. One current challenge to providing these benefits is that there are few pharmacist-led LAI clinics even though pharmacists are among the most accessible healthcare providers. In Ohio, pharmacists are recently permitted to administer LAIs to patients. This project aims to establish an outpatient LAI clinic under a collaborative practice agreement between pharmacists and psychiatrists at a community hospital.

Methods: The outpatient LAI clinic will be established to provide LAIs for behavioral health patients with the needs for these medications with the goals of optimizing patient adherence, minimizing hospital readmission rates, and reducing associated costs. In this clinic, psychiatric clinical pharmacists will provide the injections, laboratory monitoring, medication counseling, and therapy adjustments. The PGY2 resident will develop a collaborative drug therapy management (CDTM) agreement, which will define the pharmacists' scope of practice and include detailed protocols for drug administration, laboratory ordering and monitoring, therapy adjustments, and patient follow-up services. The protocols will specify pharmacist training requirements, pharmacist peer review process, and periodic quality assessment of the services provided. The practice agreement will adhere to all the laws and rules established by the Ohio State Board of Pharmacy to allow clinically trained pharmacists to provide LAIs to patients. The practice agreement and protocols will be presented to the Pharmacy and Therapeutics (P&T) Committee for approval after the psychiatrists have the opportunity to make suggestions and modifications. Once the P&T committee approves the practice agreement and relevant protocols, they can be implemented provided that the other components of the LAI clinic, such as space, pharmacist training, and drug acquisition process are ready.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-128

Poster Title: Integrating an interdisciplinary approach to medication reconciliation for transitions of care in a family practice department of a rural healthcare system

Primary Author: Alexandra Dimit, Marshall University/Holzer Health System, OH; **Email:** adimit@holzer.org

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Purpose: Reducing readmission rates following acute care hospitalization continues to be an area for improvement in the healthcare system. Following the 2010 Affordable Care Act, the Centers for Medicare and Medicaid began an initiative to improve readmission rates nationwide. Pharmacists are trained to address the concerns about patient safety and efficacy pertaining to medication use. Studies have shown that readmission rates and overall healthcare costs can be reduced when pharmacists are actively involved in post-discharge planning. This study will evaluate the impact of including a pharmacist in an interdisciplinary approach to medication reconciliation on 30-day readmission rates relative to current methods.

Methods: This nonrandomized, single-center study will be submitted to the Institutional Review Board for approval. Holzer Health System ambulatory pharmacy services will collaborate with Holzer Family Practice to provide pharmacist-led medication reconciliation to patients recently discharged from the hospital. Patients seen between September 2016 and March 2017 are eligible to participate in this study provided that they are at least eighteen years old, and not discharged to a nursing facility or long-term care rehabilitation facility. During a scheduled, post-discharge appointment with the patient's primary care provider, a pharmacist will perform medication reconciliation. The medication reconciliation will include reviewing medication profiles, disease state and medication education, identification of any gaps in care, adherence issues, therapeutic duplications, medication errors, adverse reactions, or drug interactions. Once the medication reconciliation is complete, the pharmacist will discuss any concerns, recommendations, or opportunities for intervention with the physician. Patients will be monitored for thirty days after discharge for potential readmissions. Readmission rates of patients who have had a pharmacist perform their medication reconciliation will be compared

to readmission rates from September 2015-March 2016 for the family practice department, and the average 30-day readmission rates for Holzer Health System and the United States.

Results: N/A

Conclusion: N/A

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-129

Poster Title: Impact of a medication assistance program

Primary Author: Samantha Hartings, Mary Rutan Hospital, OH; **Email:** s-hartings.1@onu.edu

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Christina Myers

Purpose: In 2010, the Logan County Census reports approximately 15% of the population below the poverty line. The 2014 Small Area Health Insurance Estimates (SAHIE) estimates nearly 11% of Logan County occupants are uninsured. Improving medication access could have a potentially significant impact on frequent flyer emergency department visits and hospital re-admission rates. The purpose of this study is to assist participants in acquiring their medications either free or at a discounted cost through manufacture programs and discounts.

Methods: All eligible patients will be identified by emergency department and hospital personnel. Pharmacy will receive a referral and a pharmacy technician will set up an appointment to collect the participant's medication list, identify eligible medications, and acquire the necessary demographic information, such as a W-2 form, social security statement, disability benefit verification statement, and a bank statement/check stub to meet the requirements of the manufactures' programs. A pharmacist will counsel the patient on their medication(s) and provide an index card with important prescription information. The pharmacist will perform a medication review and then contact the participant's health provider to obtain his/her signature or make therapeutic substitution recommendations regarding medications that are ineligible and a new prescription when required. After receiving the signed application back from the provider, the pharmacy will complete the application and, if approved, the medications will be shipped directly to the patient. The primary outcome variable will be number of patient interventions identified. Secondary outcome variables will include emergency department and hospital readmission, dollar value of medication acquired, and patient satisfaction. Descriptive statistics will be used for the primary outcome variable with inferential statistics for readmission and patient satisfaction.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-130

Poster Title: Prescribing patterns of direct oral anticoagulants within an academic medical center

Primary Author: Aimrie Ream, Mercy Health, OH; **Email:** aream@mercy.com

Additional Author (s):
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Deidre Rohaley

Purpose: Direct oral anticoagulants (DOAC) are an increasingly popular alternative to warfarin. In 2012, an internal drug utilization evaluation (DUE) of rivaroxaban revealed areas for improvement in regards to physician prescribing and pharmacist monitoring of rivaroxaban. Two additional DOAC medications have since been approved, apixaban and edoxaban. The purpose of this evaluation is to assess current DOAC prescribing patterns at an academic medical center for commercially available DOAC medications, identify if previous knowledge gaps have been successfully addressed, and identify potential areas for process improvement. Additionally, safety outcomes will be reviewed.

Methods: Once approval is received from the Institutional Review Board, patients will be identified through use of the electronic health record (EHR). A report generated by the EHR will include all patients during January 1, 2016 – June 30, 2016 for whom an order was placed for DOAC therapy (dabigatran, apixaban, edoxaban, or rivaroxaban). The pharmacy resident will perform a retrospective chart review of these patients to include only patients that were newly started on one of the specified agents. The following data will be collected: age, gender, actual body weight, allergies, drug, indication, dose, renal and liver function tests, prescriber, medical unit, expected length of treatment, concomitant medications (to identify drug interactions), contraindications, adverse events, and whether inpatient pharmacy education was provided to the patient. Up to three months post-discharge will be reviewed to assess 30-day readmission rate, discontinuation rates, and adherence (proportion of days covered will only be calculated for patients that utilize one of the medical center's outpatient pharmacies in the local area). Data analysis will include descriptive statistics. Confidentiality will be maintained, as patient identifiers will not be used in data collection. Upon completion of the DUE, hospital units with

the highest number of prescriptions issued will be targeted for recruitment of patients into a new anticoagulation clinic service where pharmacists monitor DOAC therapy.

Results: Not applicable

Conclusion: Not applicable

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-131

Poster Title: Evaluation of inpatient tolvaptan use in a 338-bed hospital with post-evaluation prescriber education and assessment

Primary Author: Megan Foreman, Mercy Health - Regional Medical Center, LLC, OH; **Email:** mmforeman@mercy.com

Additional Author (s):

Purpose: Tolvaptan is a vasopressin antagonist FDA-approved to treat hypervolemic and euvolemic hyponatremia. The average price of treatment is around $1,200, which represents significant cost for both the hospital and the patient. The objective of this study is to evaluate the usage of inpatient tolvaptan treatment and design institution-specific education to guide tolvaptan usage.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record will be used to identify patients who received tolvaptan during their inpatient stay. Data gathered from patient profiles will include the following: gender, demographics, etiology of hyponatremia, baseline serum sodium, tolvaptan dosing regimen, sodium levels at discontinuation of therapy, prior and/or concomitant treatment of hyponatremia, and prescriber name/specialty. Prescriber documentation will also be examined to determine if reasons for selecting tolvaptan therapy were recorded. Following completion of the drug use evaluation, institution-specific prescriber education will be created to guide tolvaptan usage. Assessment of education provided to prescribers will consist of a questionnaire determining if education has changed their practice.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-132

Poster Title: Evaluation of a pharmacist-led medication reconciliation and discharge program in a psychiatric population

Primary Author: Jerome Pasquale, Mercy Health - St. Charles Hospital, OH; **Email:** jpasquale@mercy.com

Additional Author (s):
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Purpose: Psychiatric patients are at an increased risk for medication discrepancies due to polypharmacy, poor adherence, and comorbid disease states. Currently there is no pharmacist-led medication reconciliation program upon admission or medication counseling upon discharge. Although medications are reconciled upon admission and discharge counseling is provided, a pharmacist is not involved in these processes. The objective of the study is to evaluate if a pharmacist-led medication reconciliation and discharge education program results in a decrease in the overall number of medication discrepancies, an increase in medication appropriateness, and improvement in a discharge education survey score.

Methods: This single center pilot study will be conducted at the Behavioral Health Institute located on the hospital's campus. All patients admitted to unit C or D of the Behavioral Health Institute will have a medication reconciliation review conducted as soon as possible after admission by the researcher. This up-to-date medication list will be compared with the list derived from the current nursing led process and any discrepancies between the two lists will be noted. Also, the researcher will meet with patients 1 to 2 days prior to discharge and discuss their home medication regimen. A survey will be administered prior to medication education and after education to determine if there was any improvement in the patient's understanding of key aspects of their medication regimen including: name, indication, dose, frequency, and possible side effects of each medication. The primary objectives are the overall number of medication discrepancies found, change in medication appropriateness index scores, and improvement in discharge medication education survey scores. The secondary objectives are classification of the medication discrepancies found, overall cost avoidance from preventing medication errors, and documentation of dual-antipsychotic usage at discharge with proper justification in compliance with HBIPs 5.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-133

Poster Title: Comparison of vancomycin regimens and resultant trough concentrations in a pediatric population

Primary Author: Derek Gyori, Mercy Health St. Vincent Medical Center, OH; **Email:** djgyori@mercy.com

Additional Author (s):
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Purpose: The Infectious Diseases Society of America currently recommends a vancomycin dose for pediatric patients of 40 mg/kg/day divided every six hours for minor infections and 60 mg/kg/day divided every six hours for more complicated infections. Recent studies have shown the current dosing strategies are not consistently achieving the recommended target vancomycin troughs of 10 to 20 mcg/mL for minor infections and 15 to 20 mcg/mL for complicated infections. The objective of this study is to evaluate initial and subsequent vancomycin dosing regimens to compare the frequency of therapeutic trough levels and nephrotoxicity in pediatric patients.

Methods: A single center, retrospective chart review will be conducted after approval from the Institutional Review Board. Subjects between the ages of 29 days to 17 years admitted to the general pediatrics or pediatric intensive care units who received intravenous vancomycin from September 1, 2013 to August 31, 2016 will be identified via the electronic medical record. For inclusion, a subject must have received more than three vancomycin doses and had a trough level drawn one hour prior to vancomycin. Neonates, subjects receiving vancomycin via continuous infusion or without a documented trough concentration, and subjects with a history of renal replacement therapy will be excluded. The following data will be collected: demographic information, admitting service, past medical history of cystic fibrosis, burn, or cancer, recent antimicrobial therapy, type of infection and pathogen, initial and subsequent vancomycin regimens, vancomycin trough levels including timing in relation to doses, renal function measures, and concomitant nephrotoxic medications. Initial intravenous vancomycin doses will be categorized as 40 to 45 mg/kg/day or 60 mg/kg/day and the percent of subjects who reached a target vancomycin trough level will be compared. Secondary analysis of dose

adjustments, doses stratified by age group and admitting service, common dosing intervals, and nephrotoxicity will be assessed. Data will be analyzed using descriptive statistics, Chi-square or Fisher's exact test, and student's t-test as appropriate.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-134

Poster Title: Pharmacist management of vancomycin dosing in the critical care unit of an acute care urban hospital

Primary Author: Rachel Gresko, Mercy Medical Center, OH; **Email:** rachel.gresko@cantonmercy.org

Additional Author (s):
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Purpose: Vancomycin is a glycopeptide antibiotic with effective coverage against Gram-positive bacteria. When given intravenously, there is a potential for harmful adverse events including nephrotoxicity and ototoxicity. Monitoring trough concentrations allows clinicians to minimize adverse effects, while ensuring efficacy. Pharmacist management of vancomycin therapy in a hospital setting can provide an increased frequency of therapeutic troughs, in addition to added patient safety. The primary objective of this study is to assess the number of therapeutic first troughs obtained from pharmacist managed vancomycin compared to non-pharmacist vancomycin management. The ultimate goal of this research is to implement a hospital-wide pharmacy-to-dose vancomycin protocol.

Methods: Pharmacy will manage all vancomycin dosing and monitoring for patients admitted to the intensive care unit (ICU) during the month of November 2016. Management includes ordering appropriate initial vancomycin doses, measuring and assessing troughs, making dosing adjustments, monitoring cultures, and providing recommendations for changes in therapy when necessary. Data collected from current patients will be retrospectively compared with patients who were prescribed vancomycin in the ICU in November 2015. The primary outcome of the study is percentage of troughs therapeutic at first draw. Secondary measures of this study will include percentage of subtherapeutic troughs (< 10 mcg/mL) and percentage of supratherapeutic troughs (>20 mcg/mL). Inclusion criteria for this study include patients with an initial vancomycin consult while in the ICU and patients admitted to the ICU from the emergency department with no more than 1 dose of vancomycin administered. Exclusion criteria include patients started on vancomycin outside of the ICU, hemodialysis patients, pregnant patients, and patients with orders for oral vancomycin therapy.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-135

Poster Title: Implementation of two follow-up interactions between a pharmacist and patient after hospital discharge to reduce 30-day readmission rate

Primary Author: Gregory Hauler, Mercy Medical Center, OH; **Email:** gregory.hauler@cantonmercy.org

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Purpose: In 2011, there were approximately 3.3 million adult 30-day hospital readmissions, resulting in $41.3 billion in hospital costs. Of all 30-day readmissions, the majority occurs within 15 days of hospital discharge. Pharmacists are integral in providing medication education, improving adherence, preventing medication errors, and identifying adverse events that may contribute to readmissions. The primary objective of this study is to evaluate the impact of pharmacist involvement in the hospital follow-up appointment and subsequent phone call on 30-day readmission rate. Secondary objectives include adherence score, number of accepted and total pharmacist interventions, time spent with patient, patient satisfaction, and physician satisfaction.

Methods: This study will be submitted to the Institutional Review Board for approval. This is a descriptive study that will be conducted from October-December 2016 in the Mercy Ambulatory Care Clinic (ACC). Patients discharged from the Medical Teaching Service are scheduled for a hospital follow-up appointment within ten days in the ACC. The pharmacist will contact the patient prior to their scheduled appointment to serve as a reminder call and inform the patient to bring in all of their medications. At the hospital follow-up appointment, the patient will meet with the pharmacist prior to meeting with the physician. During this interaction, the pharmacist will complete a medication history/reconciliation. Additionally, the pharmacist will assess adherence via the 4-item Morisky Medication-Taking Adherence Scale (MMAS), provide adherence/medication counseling, and identify pharmacist interventions. Patients will also be given an optional, anonymous survey to assess satisfaction with the pharmacist. The interaction will be documented in the patient's electronic medical record and the findings will be reiterated to the patient within seven days after the appointment via telephone. The physicians will be given an optional, anonymous survey to assess satisfaction

with the pharmacist. The following data will be collected; age, gender, ethnicity, admitting diagnosis, discharge date, emergency department visits, co-morbidities, number of medications, adherence score, pharmacist interventions, patient and physician satisfaction via survey, and the time spent with patient during the appointment.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-136

Poster Title: Impact of emergency medicine pharmacists on follow-up of positive microbiological culture results

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Purpose: Urinary tract infections (UTIs) and skin and soft tissue infections are commonly diagnosed infections in the emergency department (ED), with bacteremia being less common. The 2010 Infectious Diseases Society of America guideline for the management of acute uncomplicated cystitis and pyelonephritis states that empiric antibiotic selection should be based on local and national antibiograms. However, the isolated pathogens are not always susceptible to the antimicrobial regimen prescribed at discharge from the ED. This can lead to therapy failure, ED revisits and hospitalizations. The objective of this study is to assess the impact of a pharmacist led ED culture follow-up program.

Methods: Pending institutional review board approval, a retrospective chart review will be conducted and will include patients discharged from the ED with a positive urine, blood, abscess or wound culture from August 1, 2015 to August 1, 2016. Patients will be excluded if they had asymptomatic bacteriuria, contaminated urine culture, or were hospitalized. A pharmacy report will identify interventions made through the culture follow-up program. The overall number of interventions that the pharmacist made and the method of follow-up will be recorded. A further analysis of the positive urine cultures that required a pharmacist intervention will be conducted. The empiric antibiotic regimen prescribed at discharge will be classified as optimal, appropriate or inappropriate. Optimal therapy is defined as a urinary isolate susceptible to the empiric antibiotic therapy and is a preferred therapy. The preferred antibiotic list is based on the local and national antibiograms. Appropriate therapy is defined as a urinary isolate susceptible to the empiric antibiotic therapy and is not a preferred therapy.

Inappropriate therapy is a urinary isolate not susceptible to the empiric antibiotic therapy, not discharged on an antibiotic, or discharged on an antibiotic that is not used to treat a UTI. A sub-group analysis will compare the ED revisit rate within 30 days for urinary tract infections prior to and post the culture follow-up program.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-137

Poster Title: Use of dalbavancin as an alternative to traditional agents for the treatment of acute bacterial skin and skin structure infections (ABSSSI)

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Additional Author (s):
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Purpose: Dalbavancin is a lipoglycopeptide antimicrobial given as a one-time intravenous (IV) dose for the treatment of ABSSSI. The advantages of dalbavancin are one time dosing, no therapeutic drug monitoring and potential avoidance of hospital admission. The disadvantages of dalbavancin are high cost and potential overuse in settings where less expensive options exist or antimicrobial therapy is not warranted. The primary objective of this study is to determine the number (%) of patients with an ABSSSI diagnosis admitted to a level 1 trauma center who would have qualified for dalbavancin treatment using predefined use criteria.

Methods: The study will be submitted to the Institutional Review Board for approval. This is a prospective chart review of adult patients admitted to a level 1 trauma center with a primary diagnosis of cellulitis (ICD10 L03) and/or local skin and soft tissue infections (ICD10 L08.9). Inclusion criteria are presence of greater than or equal to 2 local signs/symptoms of complicated ABSSSI and greater than or equal to 1 systemic sign or complicating factor requiring IV therapy. The following data will be collected from the electronic medical record: patient age, gender, ethnicity, hospital unit and service, antibiotic allergies, length of stay, local symptoms and signs of infection, temperature, laboratory results (including white blood cell count, vancomycin levels, microbiology results), antibiotic therapy, adverse effects related to antibiotic therapy, peripherally inserted central catheter placement, need for surgical intervention, development of deep seated infection during hospitalization related to ABSSSI, intravenous drug use, contraindication to linezolid oral therapy and 30 day readmission. Patients will be classified as qualifying for dalbavancin if they meet all of the following criteria: requirement of IV therapy for at least 3 days but less than 14, no gram negative or anaerobes

isolated, no need for operative interventions, linezolid therapy contraindicated, and no need for hospital management of other comorbidities. All data will be de-identified and maintained confidentially. Descriptive statistics will be utilized to analyze results.

Results: n/a

Conclusion: n/a

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-138

Poster Title: Clinical and humanistic outcomes of face-to-face and telehealth warfarin management: a retrospective, crossover study

Primary Author: Rachel Maxwell, MetroHealth Medical Center, OH; **Email:** r-maxwell@onu.edu

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Purpose: Health systems are rapidly expanding to offer ambulatory services, including warfarin-management, throughout surrounding communities. This can lead to various warfarin-management approaches with lack of standardization from site to site. This study will evaluate clinical and humanistic outcomes of warfarin management via face-to-face and telephone encounters to determine how well patients are clinically managed in each setting; as well as how satisfied patients are with telehealth care. This information may help guide health-systems to decide which services to offer and which patients may benefit from telehealth or face-to-face encounters.

Methods: This study will be approved by the institutional review board prior to commencement. The population includes about 165 patients transitioning from two satellite anticoagulation clinics to the Medication Management Clinic (MMC) for warfarin management. Patients must be 18 years or older, taking warfarin, and managed by one of the two satellite clinics at least six months prior to transitioning to MMC. Patients will be excluded if warfarin is discontinued during the study period, patient is home INR testing, or if the patient uses the face-to-face clinic instead of telehealth more than 25% of the time. RedCap software will be used for retrospective data collection including; demographics, indication, goal INR range, use of chronic NSAIDs or antiplatelet medications, encounter type, INRs, number of procedural interruptions, and hospitalizations/emergency room visits stratified by primary diagnosis and bleed type per BARC score (Bleeding Academic Research Consortium). Data will be collected from six months prior to transitioning to MMC through six months following the transition. Design: Non-inferiority, retrospective crossover. Primary outcome: time in therapeutic range

(TTR) calculated via the Rosendaal method. Secondary outcomes include extreme INR level (INR >,= 4.5 or INR

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-139

Poster Title: Impact of pharmacist led disease state management of patients with diabetes in primary care clinics

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Purpose: Current literature demonstrates the positive impact of clinical pharmacists in primary care clinics on hemoglobin A1c (HbA1c). However, there is limited information detailing the effects of a clinical pharmacist in a primary care clinic on patient satisfaction and medication adherence. In addition, the financial viability of a pharmacist in this setting has yet to be fully explored. The objectives of this study are to contribute to existing literature on pharmacists' effect on diabetes control, patient satisfaction, patient adherence, and sustainability.

Methods: This study is pending Institutional Review Board approval. This study is a prospective chart review with patient survey comparing clinical pharmacist disease state management of diabetes mellitus under a collaborative practice agreement to usual care. Patients will be identified as members of the control or intervention group utilizing reports within the electronic medical record (EMR). Demographic data will be collected from their index visit: age, gender, height, weight, body mass index, race, and duration of diabetes. Clinical data will be collected every three months starting with the index visit: hemoglobin A1c (HbA1c), number of medication doses missed in the week prior to clinical pharmacist visit, number of office visits, and presence of statin therapy. Another report within the EMR will be used to gather the total revenue of the clinical pharmacy services over a six month period of time. Once during the study period, intervention patients will be given the opportunity to complete an optional, anonymous, abbreviated version of the Clinicians and Group Consumer Assessment of Healthcare Providers and Systems survey in order to determine patient satisfaction with the clinical pharmacy services.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-140

Poster Title: Evaluating the impact of a pharmacist on guideline directed medical therapy in patients with reduced ejection fraction heart failure

Primary Author: Adam Ingram, MetroHealth Medical Center, OH; **Email:** aingram@metrohealth.org

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Purpose: The current heart failure guidelines emphasize the use of guideline directed medical therapy, which includes recommendations to titrate specific medications shown to reduce morbidity and mortality to target doses reflected in published literature. This pilot study aims to investigate the impact of a pharmacist-run, outpatient heart failure management clinic on patients' heart failure outcomes and healthcare related costs.

Methods: This is a retrospective electronic chart review pending approval from the Institutional Review Board. Patients who were referred to the pharmacist-run, outpatient heart failure management clinic will be considered for inclusion. The primary endpoint is the average time (number of weeks and number of visits) to achieve individualized target doses of guideline-indicated medications. Beta-blocker titration will be evaluated within the secondary endpoints: percentage of patients titrated to target doses, reasons for inability to fully titrate, and the percentage of patients with a left ventricular ejection fraction of 35 percent or greater after maximal beta-blocker titration. Additional secondary endpoints include the total and per-visit revenue generated as well as the change in average number of all cause and heart failure-specific hospital admissions and emergency department visits. Data will be stratified into two patient groups; those whose medications were partially titrated and those whose medications were not titrated at the time of enrollment into the clinic. Data reviewed will include demographic characteristics, New York Heart Association functional class, baseline and post-titration ejection fraction, dates and number of visits, reasons for inability to titrate beta-blockers, as well as number and type of hospital admissions and emergency department visits. Analysis of continuous variables will be completed using a Wilcoxon signed rank test. All other endpoints will be reported using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-141

Poster Title: Implementation of FilmArray blood culture identification panel: Assessment of time to appropriate antimicrobial therapy and subsequent impact on patient outcomes

Primary Author: Kaylee Wentworth, Mount Carmel West Hospital, OH; **Email:** kaylee.wentworth@mchs.com

Additional Author (s):
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Purpose: The FilmArray Blood Culture Identification (BCID) panel identifies 24 organisms and 3 antibiotic resistance genes in approximately 1 hour. Previous studies suggest that early detection of the pathogen positively impacts patient outcomes. In addition, rapid identification may reduce the amount of time spent treating contaminants and improve time to optimal therapy. The purpose of this study is to analyze the effects of the FilmArray BCID panel on appropriate antimicrobial use, including duration of vancomycin therapy, and patient outcomes.

Methods: This retrospective chart review will be submitted to the Institutional Review Board for approval. The hospital informatics system will be used to identify patients with positive blood cultures for contaminants or methicillin-sensitive Staphylococcus aureus (MSSA). Patients will be excluded if they have positive blood cultures for pathogens other than contaminants or MSSA, or if they expire or transfer to palliative care within 24 hours of the positive culture. Antimicrobial utilization and patient outcomes will be compared pre- and post-implementation of the FilmArray BCID panel. Data to be collected from electronic medical records include patient age, gender, drug allergies, serum creatinine, concomitant nephrotoxic agents, duration of vancomycin therapy, time of positive and identified blood cultures, time of appropriate antimicrobial initiation, Charlson Comorbidity Index (CCI), and Pitt bacteremia score. Patient data will be de-identified for confidentiality. Time to appropriate antimicrobial therapy and patient length of hospital stay will be the primary outcomes of the study. Secondary outcomes will include length of intensive care unit (ICU) stay, time to negative blood culture, adverse drug events, 30-day mortality, and total hospital cost.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-142

Poster Title: Pharmacist initiated intervention in sepsis management in the emergency department

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Additional Author (s):
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Jocelyn Owusu-Yaw

Purpose: The purpose of this research project is to improve patient care, compliance with the sepsis bundle, and quality measures set forth by Center for Medicare and Medicaid Services (CMS) by implementing pharmacist driven early intervention in patients presenting to the emergency department (ED) with sepsis. The primary outcome is time to antibiotic administration, thus complying with the 3-hour sepsis bundle and 1-hour septic shock recommendations. Secondary outcomes include overall sepsis bundle compliance, fluid resuscitation, and empiric antibiotics. The overall goal is to improve adherence to standard of practice in the management of septic patients.

Methods: The pharmacists will identify patients to initiate an intervention by evaluating each patient's Systemic Inflammatory Response Syndrome (SIRS) criteria. If the patient has at least 2 SIRS criteria, the pharmacist will go to the bedside and assist in the initial evaluation of the patient with the nurse. If there is a high likelihood of infection or sepsis is suspected, the pharmacist will discuss the evaluation of the patient with the physician and make an antibiotic recommendation based on the patient's presentation and history. Data will be collected on all patients at least 18-years of age who are coded with unspecified septicemia on admission. Patients will be placed into two separate groups; group one will be patients that the ED pharmacist initiated an intervention on and group two will be the control group of patients who presented when the ED pharmacist was not present due to variable staffing hours. Data will be collected through retrospective chart review and also in real time by the ED pharmacists during the initial intervention. In addition, the antibiotics recommended by the ED pharmacist will be

assessed to determine the appropriateness based on the presenting source of sepsis and will also be evaluated for appropriate coverage once culture results are available. This project has recently been approved by the Institutional Review Board for the health system.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-143

Poster Title: Impact of Antibiotics on Readmission Rates in Pediatric Patients with Asthma Exacerbations and Viral Infections

Primary Author: Yejin Choi, Nationwide Children's Hospital, OH; **Email:** jane.choi@nationwidechildrens.org

Additional Author (s):
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Purpose: Respiratory viruses promote bacterial infections through different mechanisms. Secondary bacterial infections following a viral infection with rhinovirus or influenza have been well described. Co-infection in patients with asthma increases risk of hospital readmission due to an asthma exacerbation. However, establishment of a bacterial etiology in pediatric patients is challenging due to the limitations associated with performing a bronchoaveolar lavage (BAL) and obtaining sputum specimens in children. The objective of this study is to determine whether patients with asthma who are viral positive on admission are less likely to be readmitted for an asthma exacerbation after antibiotic utilization.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record system will identify pediatric patients aged 2 to 18 years with a hospital admission due to an asthma exacerbation found to be viral positive through a respiratory viral panel. The following data will be collected: patient age, gender, admission date, discharge date, readmission within 30 and 60 days for an asthma exacerbation, emergency department (ED) or urgent care (UC) visit within 30 and 60 days for an asthma exacerbation and antibiotic use including route and duration. If available, results of a BAL or sputum culture will be collected. All data will be recorded without patient identifiers and maintained confidentially. Average length of stay will be calculated.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-144

Poster Title: Evaluation of dexamethasone versus prednisone/prednisolone for acute asthma exacerbations at a pediatric hospital

Primary Author: Brett Leja, Nationwide Children's Hospital, OH; **Email:** brett.leja@nationwidechildrens.org

Additional Author (s):

Purpose: The primary objective of this study is to determine if dexamethasone (DEX) (given either enterally or intravenously (IV)), is superior or inferior to oral prednisone (PRED) or prednisolone (PREDN) in the inpatient, non-intensive care unit (ICU) setting for asthma. Secondary objectives are to perform a medication use evaluation of enteral and IV DEX in inpatient non-ICU patients with a primary diagnosis of asthma at my institution.

Methods: Outcomes were evaluated by completing a retrospective chart review via the electronic medical record from 01/01/2016 to 06/30/2016 in patients aged 2 to 18 years with a primary, admitting diagnosis of asthma. Data was organized into two study cohorts: (1) patients who received DEX and (2) patients who received PRED or PREDN. The primary outcome was comparison of asthma related hospital readmission rates, emergency department (ED) visits, or urgent care (UC) visits within 7 days of hospital discharge. Other outcomes included length of stay (LOS) and evaluation of asthma controller (initiation or continued) during the hospital admission.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-145

Poster Title: Inhaled vancomycin for suppression of methicillin-resistant staphylococcus aureus in cystic fibrosis patients

Primary Author: Michelle Robosky, Nationwide Children's Hospital, OH; **Email:** michelle.robosky@nationwidechildrens.org

Additional Author (s):
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Purpose: Lung damage secondary to chronic infection is the leading cause of morbidity and mortality in cystic fibrosis (CF) patients. Prevalence of methicillin-resistant Staphylococcus aureus (MRSA) has nearly tripled in recent years. Detection of MRSA in the respiratory tract has been associated with worse lung function, decreased survival, and an increased risk of poor recovery of baseline lung function post-pulmonary exacerbation. No inhaled antibiotics are currently approved for suppression of MRSA in CF patients. Inhaled vancomycin as localized treatment avoids the nephrotoxicity and ototoxicity associated with systemic vancomycin. This study aims to evaluate safety and efficacy of off-label inhaled vancomycin therapy.

Methods: This study is designed as a retrospective, single-center drug use evaluation of off-label aerosols compounded using vancomycin for injection. Institutional review board approval will be obtained to review inhaled vancomycin use in pediatric and adult CF patients who received at least one dose of this therapy between October 1, 2008 and September 30, 2016. Electronic medical record data will be analyzed for improved pulmonary function test outcomes, reduced hospitalizations, reduced need for oral and intravenous antibiotics, and patient-reported intolerance or side effects. Additionally, patient-specific information including: age, sex, race, body mass index, CF genotype and concomitant medications including antistaphylococcal therapies and additional inhaled antibiotics will be collected. Culture data for sputum, endotracheal tube, bronchoscopy, and sinus samples will be evaluated for appropriateness of vancomycin selection as well as changes in MIC. Data will be reported using descriptive statistics.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-146

Poster Title: Evaluation of blood cholesterol management in HIV-positive patients within an outpatient immunodeficiency clinic

Primary Author: Gregory Sneed, Nationwide Children's Hospital, OH; **Email:** gregory.t.sneed@gmail.com

Additional Author (s):
Kristen Lamberjack

Purpose: The American College of Cardiology and American Heart Association (ACC/AHA) Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults established a correlation between elevated blood cholesterol and cardiovascular risk. The guideline provided recommendations for the initiation of statin therapy in patients within four major statin benefit groups, but did not address specific patient populations with increased cardiovascular risk. The primary objective of this study is to determine provider compliance with the ACC/AHA guideline within an outpatient immunodeficiency clinic for HIV patients, and to quantify statin eligibility of this high-risk patient population.

Methods: A retrospective chart review of patients with HIV will be conducted to evaluate the appropriateness of statin therapy by providers within an outpatient immunodeficiency clinic, based upon the ACC/AHA Guideline on the Treatment of Blood Cholesterol to Reduce Atherosclerotic Cardiovascular Risk in Adults. The chart review will examine gender, age, race, total cholesterol, systolic blood pressure, smoking history, diabetes diagnosis, and hypertension treatment. This information will be input into the ASCVD Risk Estimator provided by the American College of Cardiology to obtain a recommendation for statin therapy. This recommendation will be compared to the actual prescribing record for the patient. If the prescribing record does not comply with the recommendation, documentation will be reviewed to determine if the prescriber provided rationale for their decision. The chart review will also evaluate the efficacy and safety of each patient's regimen based upon percentage decrease in low-density lipoprotein and patient-reported side effects that led to drug discontinuation.

Results: The final results will be presented at ASHP Midyear Clinical Meeting & Exhibition.

Conclusion: The conclusion will be presented at ASHP Midyear Clinical Meeting & Exhibition.

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Research-in-Progress

Session-Board Number: 12-147

Poster Title: Evaluation of drug waste associated with white-bagging for an outpatient gastroenterology (GI) infusion clinic at a pediatric hospital.

Primary Author: Kriss Petrovskis, Nationwide Children's Hospital, OH; **Email:** kriss.petrovskis@nationwidechildrens.org

Additional Author (s):
Patrick Collins
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Michael Storey

Purpose: White-bagging is the process by which an outside pharmacy ships medication on behalf of a patient to a health-system pharmacy for administration. The process is sometimes used by payers as a drug cost-containment strategy, though it carries significant operational, regulatory, safety and fiscal implications for health-system pharmacies, including creation of drug waste. The purpose of this study is to quantify drug waste associated with white-bagging infliximab for GI infusion clinic patients and identifying causes of waste. This study will serve as a baseline analysis for a quality improvement initiative to reduce drug waste associated with white-bagging.

Methods: This is a single-center retrospective analysis. All patients receiving intravenous infliximab from January 1, 2016 through September 30, 2016, white-bagged from an outside pharmacy will be included. Exclusion criteria include any white-bagged product received for a patient who was not scheduled for an infusion during the study period. Demographic data to be collected include patient name, age, weight and gender. Infliximab dose, quantity received, arrival date, infusion date, amount of drug wasted and reason for waste will be evaluated. Drug waste will be categorized as excess supply, expiration or partial vial. Excess supply waste is drug shipped but never administered to a patient. Expiration waste is drug that expires before it can be used. Partial vial waste is defined as drug discarded from a partially used vial. If waste cannot be associated with one of the categories, it will be noted as an outlier and categorized as miscellaneous waste. The study will include 27 patients and 110 unique infusion clinic visits. Descriptive statistics will be applied to analyze the data. This study is exempt from Institutional

Review Board approval, per the institution's IRB-041-02 Determination of Human Subject Research Protocol, which categorizes this study as a Quality Improvement/Quality Assurance project.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 12-148

Poster Title: Assessing physician perceptions of credentialing and privileging pharmacists in a free-standing pediatric institution

Primary Author: Kasandra Chambers, Nationwide Children's Hospital, OH; **Email:** kdchambers3@gmail.com

Additional Author (s):
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Purpose: In 2012, the Centers for Medicaid and Medicare Services (CMS) updated its definition of “medical staff” to include nonphysician practioners. This allows for pharmacists to obtain and exercise clinical privileges within their health-systems. To acquire such privileges, pharmacists must abide by the same credentialing and privileging policies as other nonphysicians set forth by the medical staff. Physician engagement is crucial in obtaining these privileges. Few pediatric institutions have implemented this practice. The purpose of this study is to assess physician perceptions of credentialing and privileging pharmacists within a free-standing pediatric institution prior to implementing a credentialing and privileging process.

Methods: A steering committee comprising of pharmacists in different practice areas will review the current literature and compile a list of target areas to implement pharmacist privileges. Based on this list, an electronic survey will be developed to assess physicians’ perceptions on privileging pharmacists to perform these functions independently. The survey will also assess physician awareness of pharmacist capabilities, using examples of privileges pharmacists may have at other institutions. The survey will also be used to inform physicians of the changes to the CMS definition of medical staff. The survey will be distributed to all prescribers, including residents, fellows, nurse practitioners, and attending physicians in the inpatient and ambulatory environments. The data will be analyzed to determine which functions may be feasible to implement initially within our institution.

Results: Baseline results will be presented at the 2016 ASHP Midyear Clinical Meeting.

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-149

Poster Title: Strategies for prevention of dexmedetomidine withdrawal in a pediatric intensive care unit

Primary Author: Kelsey Fink, Nationwide Children's Hospital, OH; **Email:** kelsey.fink15@gmail.com

Additional Author (s):
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Purpose: Dexmedetomidine is increasingly used for sedation in the pediatric intensive care unit (PICU). There are limited reports regarding the prevalence and prevention of dexmedetomidine withdrawal upon abrupt discontinuation of continuous infusions. Various discontinuation and weaning strategies exist and include abrupt discontinuation, gradual reduction of infusion rate, and transition to enteral clonidine. The objective of this drug utilization evaluation is to describe the various weaning strategies for dexmedetomidine and compare incidence of withdrawal between strategies employed. Efficacy of initial clonidine taper, measured by need to modify the initial weaning plan, will also be analyzed.

Methods: Inclusion criteria are: all patients < 18 years of age admitted to the PICU from January 1, 2014 to September 1, 2016 with concomitant use of non-invasive positive pressure ventilation and dexmedetomidine continuous infusion for more than 24 hours. Exclusion criteria are: patients with a history of congenital heart disease, tracheostomy, home continuous positive airway pressure (CPAP) or bidirectional positive airway pressure (BiPAP), arrhythmia or use of heart rate altering medications, invasive mechanical ventilation, receiving vasoactive medications, received racemic epinephrine while on dexmedetomidine, or received other continuous sedation. Data will be collected retrospectively from the electronic medical record. Time points captured for each patient include: pre-dexmedetomidine; dexmedetomidine dose-escalation from initiation to peak dose; and dexmedetomidine weaning from peak dose to discontinuation or initiation of enteral clonidine. For those patients receiving clonidine, additional time points include: transition from first clonidine dose to dexmedetomidine

discontinuation, and tapering of enteral clonidine. Post treatment data will be collected for 24 hours after dexmedetomidine discontinuation and 48 hours after clonidine discontinuation. For each interval, average withdrawal assessment tool (WAT-1) scores and sedation scores, as well as maximum and minimum heart rates will be analyzed. Blood pressure and heart rate at 30 minutes, 1, 2, and 4 hours after peak dexmedetomidine dose will also be collected. Descriptive statistics will be used to analyze and present the findings of our use evaluation.

Results: N/A

Conclusion: N/A

Submission Category: Small and Rural Pharmacy Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-150

Poster Title: Effectiveness of a pharmacist-led tobacco cessation mobile health clinic in a rural setting

Primary Author: Colin Frank, Ohio Northern University Raabe College of Pharmacy/ONU HealthWise, OH; **Email:** c-frank@onu.edu

Additional Author (s):
Amy Fanous
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Purpose: Tobacco use is the leading cause of preventable death in America. Although there has been significant improvement in lowering the rates of tobacco use, rural areas continue to have a greater rate of tobacco use. This is due to limited treatment options from a lack of access to healthcare services and a low socioeconomic status. The potential exists that pharmacists practicing in a rural mobile health clinic could effectively eliminate these barriers. The purpose of this study is to determine the effectiveness of a pharmacist providing tobacco cessation services through a mobile health clinic in an underserved rural setting.

Methods: The study is IRB approved. Current tobacco users will be recruited from rural communities to participate in the study. Participants will be required to have an initial appointment at a mobile health clinic event where data will be collected on tobacco use, past medical history, current medications, and vital signs. At the initial visit, participants will choose a quit date and select whether they will use nicotine replacement therapy, prescription medications, or counseling alone. Additionally, participants will be asked to complete a survey assessing the effectiveness of various tobacco cessation marketing strategies, reasons for starting tobacco cessation, and perceived barriers to tobacco cessation. Participants will receive a phone call follow up on their set quit date followed by appointments at weeks 1, 4, 8, and 12 weeks of therapy either by a phone call or an on-site follow up. At each appointment, participants will be assessed on tobacco use, symptoms of nicotine withdrawal, and side effects of medications. The primary outcome variable will be the percent of patients who have not used any tobacco products after 12 weeks. Descriptive statistical measures will be used to

evaluate demographic data as well as secondary outcomes variables from the survey data. Patient documentation will be securely stored at the primary clinic site. Data utilized in the study will be de-identified and stored in a password protected spreadsheet.

Results: Pending

Conclusion: Pending

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-151

Poster Title: Evaluating enoxaparin dosing for venous thromboembolism prophylaxis in low body weight patients

Primary Author: Daniel Dybdahl, OhioHealth Grant Medical Center, OH; **Email:** daniel.dybdahl@ohiohealth.com

Additional Author (s):
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Purpose: It is hypothesized that low body weight patients receiving enoxaparin for venous thromboembolism (VTE) prophylaxis have an increased bleeding risk and require a dose reduction. The literature supporting this hypothesis is limited to studies observing anti-factor Xa levels. However, studies have not yet assessed the risk of bleeding. As a result, there is a lack of guidance for providers to decide when to reduce the dose of enoxaparin based on body weight. The objective of this study is to evaluate the impact of enoxaparin dosing on major and minor bleeding events in patients who weigh less than 45 kg.

Methods: This study was submitted to the Institutional Review Board for approval. The study is a retrospective, single-center review of patients at least 18 years of age with an actual body weight of less than 45 kg receiving enoxaparin therapy (enoxaparin 40 mg daily, 30 mg twice daily, or 30 mg daily) for VTE prevention between March 1, 2015 and September 30, 2016. Patients with a creatinine clearance (CrCl) of less than 30 mL/min and patients receiving oral anticoagulants were excluded from the study. The primary objective is to determine whether different enoxaparin doses correlate with changes in the incidence of major and minor bleeding. Major bleeding is defined as a hemoglobin drop of at least 2 g/dL in 24 hours, a transfusion of at least one unit of packed red blood cells, bleeding into a critical site (e.g., intracranial, intraocular, retroperitoneal, intraarticular, pericardial, or intramuscular with compartment syndrome), or bleeding leading to death. Minor bleeding is defined as overt bleeding not meeting the criteria for major bleeding (e.g., gastrointestinal bleeding, hematuria, hematemesis, or hematochezia). Secondary objectives include comparing the incidence of VTE, defined as a diagnosis of deep venous thrombosis (DVT) or pulmonary embolism (PE), and

performing subgroup analyses to determine the risk of major and minor bleeding events based on service line, age, gender, body mass index (BMI), and CrCl.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-152

Poster Title: Patient satisfaction and understanding of medication therapy after participation in discharge pharmacy services

Primary Author: Andrew Zurlinden, OhioHealth Marion General Hospital, OH; **Email:** andrew.zurlinden@ohiohealth.com

Additional Author (s):
Kenneth Launder

Purpose: Hospital discharge can be a hectic time for patients and has a large impact on the patient experience as well as patient wellbeing. Studies show that patients have poorer outcomes and increased hospital readmissions as a direct result of inadequate hospital discharge education due to medication discrepancies, poor patient education, and non-compliance. Pharmacist involvement in the hospital discharge process has shown to increase patient compliance and understanding of medication regimens as well as reduce medication errors and discrepancies. This study looks to determine patients' overall satisfaction and understanding of medications after utilization of pharmacy-led discharge services at a community hospital.

Methods: This quality improvement project is pending IRB-exempt status and consists of surveying patients prior to discharge from inpatient medical units. This study is designed to determine the value of the current discharge pharmacy services in place at a community hospital. Each day during the two month study period, patients due to be discharged from the hospital will be approached by the discharge pharmacy staff and offered discharge pharmacy services. Such services include medication and disease state education as well as providing the first fill of all new or changed medications from the patient's hospitalization. Regardless of participation in the discharge pharmacy service, patients will be provided a patient satisfaction survey to complete and return to their nurse before leaving the hospital. This patient survey was created to identify satisfaction with pharmacy-provided education and the patient-perceived understanding of the provided education. Participation is voluntary and no patient-specific information will be reported to the study investigators. Results of the surveys will be compared between patients that used the discharge pharmacy and those that did not. The overall impact of the pharmacy services will be evaluated.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-153

Poster Title: Cost impact of pharmacist intervention in a community inpatient behavioral health unit: a pilot study

Primary Author: Rachel Kerns, OhioHealth Marion General Hospital, OH; **Email:** rachel.kerns@ohiohealth.com

Additional Author (s):
Arvinder Kaur
Erica Wibberley
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Purpose: Admission to a behavioral health unit is associated with significant costs. Existing studies focus on reducing overall cost of admission versus the cost of medications associated with treatment. The current staffing model at Marion General Hospital does not involve significant pharmacy collaboration with providers in the behavioral health unit. Increased pharmacist monitoring of psychiatric medications should reduce side effects, duplicate therapy and optimize patient care. The primary endpoint of this study is to evaluate the total cost reduction of inpatient medications in the behavioral health unit after establishing a dedicated pharmacy presence.

Methods: A retrospective chart review was conducted on patients 18 years of age and older, who were admitted to a 26-bed acute inpatient psychiatric unit at a community hospital. Included patients were required to have a primary diagnosis of depression/anxiety, schizophrenia/schizoaffective disorder, or bipolar disorder. Exclusion criteria included patients younger than 18 years old or admitted to a medical unit. The pre-intervention time period was June 1, 2016 to July 31, 2016 and the pharmacy involvement occurred from August 1, 2016 – September 30, 2016. During the pharmacy intervention period, a pharmacy resident and an Advanced Pharmacy Practice Experience student were dedicated to reviewing behavioral health patient profiles and making medication recommendations as needed to reduce polypharmacy. The cost of each psychiatric medication will be evaluated and multiplied by the total number of administrations for each patient. Trends will also be assessed between the study groups, including psychiatric diagnoses, types of psychiatric medication, number of psychiatric doses administered, number and types of pharmacy interventions, length of stay and comorbidities.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-154

Poster Title: Validation of a Targeted Antibiotic Algorithm for Multiplex-PCR Blood Culture Identification (BCID) Results Based on Suspected Source of Infection

Primary Author: Jordan DeWitt, OhioHealth Riverside Methodist Hospital, OH; **Email:** jdewitt10@gmail.com

Additional Author (s):
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Purpose: Rapid diagnostic tests are changing the way that medical providers start and change therapy for patients with a multitude of conditions. Multiplex polymerase chain reactions (PCR) utilized for pathogen identification in blood cultures allow clinicians to tailor antimicrobial therapy in a shorter amount of time compared to traditional cultures and sensitivities, which may provide final results at 48-72 hours from collection. The purpose of this project is to validate an algorithm based on multiplex-PCR blood culture identification results stratified by suspected infectious source.

Methods: This study was a retrospective chart review approved by the Institutional Review Board. Charts were reviewed for patients admitted to 4 critical care units at a tertiary community medical center between June 1, 2016 and August 31, 2016. Patients were included if they were greater than 18 years of age and had a blood culture result with a pathogen identified via multiplex-PCR. Patient charts were reviewed for blood culture collection date and time, multiplex-PCR result date and time, suspected source of infection, empiric antimicrobial selection, proposed algorithm antibiotic, and final sensitivities to each. All data was stored without patient identifiers and maintained confidentially by the primary investigator. Collected data was analyzed to validate and compare actual empiric antimicrobial selection with algorithm guided antibiotic selection in regards to final culture sensitivity. Data was also used to assess over and/or under coverage based on all final culture sensitivities.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-155

Poster Title: Pharmacist intervention of asymptomatic bacteriuria: an antimicrobial stewardship program

Primary Author: Adam Smith, OhioHealth Riverside Methodist Hospital, OH; **Email:** adam.smith@ohiohealth.com

Additional Author (s):
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Ashraf Kittaneh

Purpose: Asymptomatic bacteriuria is oftentimes inappropriately treated with antimicrobial therapy. Current guidelines and primary literature exhibit evidence supportive of recommendations to withhold antimicrobial therapy unless the patient is either pregnant or undergoing a urologic procedure. Despite the evidence to support withholding therapy, this condition is commonly mistreated leading to antimicrobial resistance, increased financial burden to the patient and the healthcare system, as well as unwanted adverse effects from the antimicrobial therapies selected. The objective of this study is to determine the impact of pharmacist intervention on management of antimicrobial therapy in patients with asymptomatic bacteriuria and urinary tract infections.

Methods: This study was approved by our Institutional Review Board. This is a prospective, interventional study with data collection via a 24 hour urinalysis report and chart review within an electronic health record. Patients who are admitted to a general medicine unit, on antimicrobial therapy and have a urinalysis analyzed within the past 24 hours will be included. The pharmacist will review the medical record for appropriateness of therapy and contact the physician with recommendations. The primary outcome is the proportion of inappropriate antimicrobial therapy to the number of successful pharmacist interventions. A successful intervention is defined as a recommendation made to the provider that is accepted and implemented. Types of interventions include discontinuation of therapy due to a lack of indication for treatment, placement of a stop date on appropriate therapy or de-escalation of therapy. De-escalation is defined as narrowing antimicrobial coverage or transitioning the route from intravenous to oral. A secondary outcome of this study is the number of treatment days saved as a result of pharmacist intervention. Data points collected will include: medical record

number, age, gender, antimicrobial agent and dose, urinalysis and urine culture results, source of infection and number and type of intervention.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-156

Poster Title: Evaluation of a Virtual Pharmacy-Led Medication Reconciliation Pilot Program

Primary Author: Margaret Oser, OhioHealth Riverside Methodist Hospital, OH; **Email:** maggie.oser@ohiohealth.com

Additional Author (s):
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Purpose: Patients experience many transitions within the healthcare system, creating a constantly evolving medication list. Because of these frequent changes that occur, ensuring accurate medication reconciliation is of utmost importance to prevent medication errors and adverse drug events. Multiple studies have looked at the accuracy of medication reconciliations conducted by pharmacy technicians as compared to nursing and have found favorable results with pharmacy technicians. There is little research surrounding telepharmacy models for medication reconciliation, which could be useful for expanding these programs. The study will compare the accuracy of virtual medication reconciliation to in-person medication reconciliation as conducted by pharmacy personnel.

Methods: This is a retrospective, multi-center chart review of a virtual pharmacy medication reconciliation pilot program conducted at OhioHealth Grady Memorial Hospital (GMH) by technicians and pharmacists from two free-standing emergency departments – OhioHealth Westerville Emergency Care Center (WECC) and OhioHealth Pickerington Emergency Care Center (PECC). The pilot included patients over 18 admitted from the emergency departments (ED) at WECC, PECC, and GMH over a 60-day period. The in-person group will be comprised of patients at WECC and PECC, while the virtual group will include those from GMH.
In the virtual pilot, pharmacy staff at WECC or PECC was contacted by the nursing staff when a patient was being admitted and deemed appropriate for medication reconciliation at GMH. When pharmacy personnel was ready to speak with the patient, they contacted the nursing staff to transport the virtual communication technology into the room. Once the technology was ready, pharmacy personnel interviewed the patient/family. Pharmacy staff documented

the encounter in the EMR after conducting the interview and updating the list for physician review.
The specific aims of the study are to determine if there is a clinically significant difference in accuracy between the in-person and virtual group, compare the capture rate across sites and the average time spent on medication reconciliation to evaluate workflow implications, and satisfaction of the physicians, nursing, and pharmacy staff with the process.

Results: n/a

Conclusion: n/a

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-157

Poster Title: Tolerability of aerosolized versus intravenous pentamidine for Pneumocystis Jirovecii Pneumonia prophylaxis in immunosuppressed pediatric patients

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Additional Author (s):
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Purpose: At a pediatric academic children's hospital, pentamidine is a commonly used alternative for Pneumocystis Jirovecii Pneumonia (PJP) prophylaxis when the drug of choice, sulfamethoxazole-trimethoprim, is not tolerated due to adverse reactions. Pentamidine is an antifungal medication that is administered aerosolized or intravenously. Current evidence has shown efficacy of aerosolized and intravenous formulations as PJP prophylaxis, but there is a lack of literature comparing tolerability between the two administration routes. The primary objective of this study is to determine the tolerability of aerosolized versus intravenous pentamidine for PJP prophylaxis in immunosuppressed pediatric patients.

Methods: This retrospective study will be submitted to the local Institutional Review Board for approval. The study will assess the incidence and types of adverse reactions associated with pentamidine prophylaxis in immunosuppressed pediatric patients over the past 3 years, from January 1, 2014 to January 1, 2017. Study variables will be retrieved from the electronic medical record (EMR). The following data will be collected: patient gender, ethnicity, age, patient weight, allergy history, location of administration, primary diagnosis, concurrent medications (if applicable), cycle of chemotherapy (if applicable), days from transplant (if applicable), pentamidine dose, dosage form, frequency, infusion duration, pre-medications, immunosuppressive therapy, type of reaction, history of sulfamethoxazole-trimethoprim use, number of pentamidine doses before reaction, absolute neutrophil count (ANC), and Immunoglobulin E serum concentrations. The information for each reaction will be categorized for both administration routes and compared relative to the collected variables focusing on

dosage, route, use of concurrent immunosuppression, and the reaction(s). Non-parametric statistics and frequency analysis will be used to assess differences between the two routes of administration. Linear regression will be used to evaluate the variable(s) to determine if there is any association with a greater likelihood of route-induced reaction.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-158

Poster Title: Evaluation of customization from standard total parenteral nutrition (TPN) for patients admitted to a level IV neonatal intensive care unit (NICU)

Primary Author: Catherine Hobart, Rainbow Babies and Children's Hospital, OH; **Email:** catherine.hobart@uhhospitals.org

Additional Author (s):
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Purpose: TPN is an intervention used to support the nutritional needs of patients that are unable to receive adequate enteral nutrition. Currently, five standard TPN formulations are utilized by the NICU. Patients' age and weight dictate which standard formulation is used to provide nutrition. A need has been identified to assess the rate of customization from standard formulations. Deviation from standard formulations are driven by patient specific electrolyte laboratory values. The objective of this study is to describe the frequency at which the calcium and phosphorous concentrations are customized in standard TPN formulations for patients located in the NICU.

Methods: This descriptive study will be a single site, retrospective evaluation of all patients receiving TPN in the NICU from January 1, 2015 until August 31, 2016. Patients will be included from the first day of TPN therapy until discontinuation. A subgroup analysis for patients weighing less than 1500 grams will be completed. Data will be collected from the electronic medical record (EMR), TPN compounding machine, and pharmacist documented errors upon order and product verification. Data collection will include patient age, weight, standard TPN duration, custom TPN duration, dose of calcium and phosphorous administered from the TPN each day, composition of the daily TPN, and pertinent laboratory values. Descriptive statistics will be utilized to analyze data. Additionally, this study will assess secondary outcomes impacting patient safety such as error rates associated with customization of TPNs. After completing the analysis, reconsideration of standard formulations may occur to ensure 80% of TPN formulations prescribed are standard with 20% or less customized.

Results: Not applicable

Conclusion: Not applicable

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-159

Poster Title: Validation of a weight-based unfractionated heparin (UFH) protocol comparing activated partial thromboplastin time (aPTT) to the antifactor xa assay: a case-control study

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Tamara McMath
Christy Collins

Purpose: Since first described in 1953, there has been substantial clinical experience with aPTT monitoring for UFH; however, limitations have been identified. The aPTT is subject to preanalytic and biologic factors including time of blood sampling, the reagent, and coagulopathies affecting aPTT results. The antifactor Xa, however, works by quantifying the functional activity of heparin providing better estimates of the actual heparin concentration while not impacted by the preanalytic and biologic factors. This study will help to determine the efficacy and safety of transitioning to the antifactor Xa monitoring for patients receiving continuous heparin infusions at a large tertiary community hospital.

Methods: The study is a single-center prospective, and future retrospective, case-control study comparing monitoring parameters for UFH infusions. Patients will be enrolled from October 1, 2016 through December 30, 2016 and followed until heparin therapy is discontinued. Study authors will consent 30 patients prospectively for the antifactor Xa group. Patients with new UFH orders will be referred to the primary investigator (PI) by order verification pharmacists. For patients that meet inclusion criteria the PI will contact the ordering physician and, following approval, obtain informed consent from the patient. After UFH initiation, antifactor Xa levels will be evaluated by pharmacy and infusion rates adjusted using the institution's established weight-based protocol adapted for antifactor Xa levels. The aPTT control group will be identified retrospectively to match the antifactor Xa group based on location (intensive care or general medicine) and protocol (Venous Thromboembolism, Stroke, Mechanical Valve, and Cardiac/Arterial). Patients will be excluded if less than 18 years of age, breastfeeding or

pregnant, unable to give informed consent, UFH use for any other protocol not listed, and patients on oral factor Xa inhibitors. The two groups will be compared to identify a difference in average time to therapeutic window, number of lab draws required to obtain a therapeutic level, proportion of patients who reach therapeutic level within 24 hours, average time within therapeutic window, and safety outcomes such as bleeding.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 12-160

Poster Title: Analysis of time to antibiotic administration in adult febrile neutropenic patients in a hospital emergency department

Primary Author: Christopher Walczak, Riverside Methodist Hospital, OH; **Email:** walczak.11@osu.edu

Additional Author (s):
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Purpose: In cancer patients with chemotherapy-induced neutropenia, fevers may be the only indicator of a severe infection due to the reduced signs and symptoms of an inflammatory response. The American Society of Clinical Oncology (ASCO) recommends that febrile neutropenic patients should receive initial doses of empiric antibiotics within 1 hour of triage. Therefore, the objective of this study is to determine the current time to antibiotic administration (TTA) in febrile neutropenic patients who present to the emergency department. This information will be ultimately used to optimize empiric antibiotic administration and decrease TTA.

Methods: This study has been submitted and approved by the institutional review board. It is a retrospective chart review of cancer patients age 18 or older who initially presented to the emergency department (ED), were recently treated with chemotherapy, and have laboratory confirmed febrile neutropenia [absolute neutrophil count (ANC) of less than 1000 cells/mm3, and a fever with a temperature greater than or equal to 38.0°C] between May 1, 2015 and August 31, 2016. Data points that will be collected include determining average time intervals leading up to antibiotic administration (from ED registration to being seen by a physician, blood draws, antibiotic order placement, antibiotic order placement to pharmacist verification, and pharmacist verification to administration). Other outcomes of interest will include proportion of patients that utilized the febrile neutropenia order set, hospital length of stay, and inpatient deaths in patients that met the treatment goal of 60 minutes or less and those who did not.

Results: N/A

Conclusion: N/A

Submission Category: Administrative Practice/ Financial Management / Human Resources

Submission Type: Evaluative Study

Session-Board Number: 12-161

Poster Title: Impact of implementing charge on administration into an outpatient infusion center

Primary Author: Laura Stasiak, Southwest General, OH; **Email:** lstasiak@swgeneral.com

Additional Author (s):

Purpose: Patient wait times and turnover time in outpatient infusion centers are often negatively impacted by the delay in medication administration due to the need for order clarifications, which is especially prevalent in oncology infusion centers with chemotherapy orders. The purpose of this study is to evaluate the effect of implementing a charge on administration process into this outpatient infusion center. The hypothesis is that by introducing this new workflow, the time from patient arrival to first chemotherapy administration will be decreased, improving turnover time and decreasing patient wait times.

Methods: Chemotherapy orders will be completed by physicians and sent to the pharmacy for patients scheduled in the infusion center the following day. One of two pharmacists working in the infusion pharmacy will review the orders for all patients the day prior to arrival. If clarifications are needed, the pharmacist will contact the physician and get the order clarified before entering it into the system. Once the patient arrives for his or her scheduled appointment the following day, the pharmacy will compound the medication(s) from the order that has already been verified. The medication will be scanned at the patient's bedside, allowing the patient to be charged directly on administration. To assess the effect of this new workflow, patient charts will be reviewed and compared before implementation and after implementation of this process. The primary outcome is time from patient arrival to administration of first chemotherapy medication. Secondary endpoints that will be assessed include time to first pre-medication and time between first pre-medication and first chemotherapy medication to assess confounding variables between the data sets. The daily patient load, daily nursing staffing, and daily pharmacy staffing will also be used in order to compare patient charts on similar days to reduce confounding variables. This project has already been approved through the Institutional Review Board and has been deemed as a process improvement project, not human research.

Results: Data collection to occur in October and results to be presented at the conference.

Conclusion: To be presented at the conference.

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-162

Poster Title: Impact of pharmacist-led medication history overnight in a community hospital

Primary Author: Sabrina Allen, Southwest General Health Center, OH; **Email:** sallen@swgeneral.com

Additional Author (s):

Purpose: Current literature demonstrates the positive impact that pharmacists can have on medication histories, however, there is significant research lacking in the benefit of twenty-four hour coverage in the emergency department. When pharmacy staff is not available, the task of medication history typically falls to nursing. The objective of this study is to quantify medication history errors occurring overnight, and validate the need for twenty-four hour pharmacist coverage.

Methods: This prospective quality improvement study is pending Institutional Review Board for approval. The electronic medical record (EMR) will identify patients that have been admitted overnight, and a pharmacist will conduct a new medication history within forty-eight hours of admission. The pharmacist will collect medication histories by using the patient, family members, available medications lists, and external sourcing from pharmacies. Information obtained that would not be available at the original time of the medication history will not be included. All data will be recorded without patient identifiers and maintained confidentially. Discrepancies in the medication history will be documented on a daily monitoring form. Errors identified will include incorrect dosage, incorrect frequency, inactive medications listed, and missing medication. Potential adverse drug events will also be reviewed, which is defined as harmful or potentially harmful medication discrepancies.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Descriptive Report

Session-Board Number: 12-163

Poster Title: Collaborative practice between a community hospital and extended care facility utilizing a transitions of care pharmacist

Primary Author: Kailey Stough, Southwest General Hospital, OH; **Email:** kstough@swgeneral.com

Additional Author (s):
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Kaylee Adams

Purpose: Patients transferred from hospitals to extended care facilities (ECF) are at risk for errors in transitions of care (TOC) due to lack of communication between facilities. Specific patient populations identified at this institution as experiencing errors in TOC are those being transferred on IV antibiotics and those diagnosed with heart failure being transferred for rehabilitation services. The purpose of this collaborative practice between a community hospital, TOC pharmacist, and ECF is to improve the transition of patients going from hospital to ECF with IV antibiotics or for rehabilitation as part of the heart failure bundled payment program.

Methods: In order to improve the transition period for patients on IV antibiotic therapy, the inpatient antimicrobial stewardship pharmacist and the TOC pharmacist identify patients to be discharged to the ECF. Once identified, a form is completed and faxed to the supplying pharmacy handling all medication orders for the ECF. The form consists of pertinent information related to IV antimicrobial therapy, such as start date, total duration of therapy, labs, and cultures. The purpose of the IV antibiotic form and subsequent follow-up by the TOC pharmacist at the ECF is to improve the transfer of orders for IV antibiotics, prevent delays in therapy, ensure appropriate dosing, and prevent unnecessary antibiotic exposure. The TOC pharmacist also works to improve the transition period for heart failure patients that are newly enrolled in the bundled payment program at the hospital. Upon identification of potential bundled payment patients, the TOC pharmacist provides medication education prior to transfer to ECF. Once transferred to ECF for rehabilitation, the TOC pharmacist performs an admission medication reconciliation and then daily monitoring of patients for signs and symptoms of

worsening heart failure. Finally upon discharge from the ECF, the TOC pharmacist provides medication education to the patient and family during a discharge care conference with other members of the healthcare team and encourages follow-up with the tele-health nurse at home.

Results: The collaborative practice between the hospital and ECF was established in early September and thus far only a small portion of patients have been identified and evaluated; however, positive results have been observed within that portion of patients. Since initiation, about fifty percent of IV antibiotic patients going to the ECF have been identified, which amounts to about 10 patients. Appropriate documentation sent to ECF has resulted in correct stop dates and decreased delays in antimicrobial therapy upon transfer. Currently a report is being generated with pharmacy and IT at the hospital to increase the number of patients identified. Daily communication between the TOC pharmacist and the ECF staff occurs regarding weight measurements of the heart failure bundled patients and also any additional questions or concerns with either the heart failure or IV antibiotic patients. Prior to this collaboration, heart failure patients were not being monitored for weight changes daily; however, now small changes in weight can be addressed with the physicians and nurse practitioners earlier. Also, two heart failure patients were provided discharge education before leaving the ECF and reported not only being satisfied with the service, but also felt prepared to care for themselves at home.

Conclusion: Currently the collaboration between the community hospital and the ECF has been successful in improving transitions of care for specific patient populations utilizing a TOC pharmacist. Positive impacts have been seen in both heart failure patients and patients on IV antimicrobial therapy. In addition to current efforts the team from both the hospital and the ECF are working to create a collaborative practice agreement between the TOC pharmacist and physician staff at the ECF. The collaborative practice agreement will help to empower the TOC pharmacist to provide an even greater impact on patients residing in the ECF.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-164

Poster Title: Conducting a targeted multimodal antimicrobial stewardship protocol in patients with or at high risk for developing Pseudomonas aeruginosa pneumonia

Primary Author: Travis Macek, St. Elizabeth Youngstown Hospital, OH; **Email:** tpmacek@mercy.com

Additional Author (s):
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Purpose: The 2016 IDSA guidelines for implementation of antimicrobial stewardship along with newly published Hospital and Ventilator-associated Pneumonia guidelines recommend alternative dosing strategies for broad-spectrum beta lactams and proper identification of patients at high risk for multi-drug resistant (MDR) gram negative organisms. The objective of this study is to determine if length of IV anti-pseudomonal therapy can be decreased by implementing a pharmacist-driven antimicrobial stewardship program aimed at providing institution-specific appropriate double coverage to high risk patients, optimizing beta-lactam dosing to improve pharmacodynamics, and providing recommendations for appropriate duration of antibiotics in patients with Pseudomonas aeruginosa pneumonia.

Methods: This study is Institutional Review Board approved. It is a before after study to investigate the impact of a clinical pharmacist facilitated antimicrobial stewardship program on duration of IV anti-pseudomonal antibiotics in hospitalized patients with Pseudomonas pneumonia. The electronic medical record will be utilized to identify patients with respiratory cultures having been drawn within the previous 24 hours. Patients will be screened for the necessity of double anti-pseudomonas coverage by assessing antibiotic use within the previous 90 days. Other patients that will receive a recommendation for double coverage include those with septic shock and those with increased risk of mortality. Patients will be followed until culture results are obtained, and therapy narrowed if appropriate. Patients will be included in the study if they have a positive Pseudomonas respiratory culture. Beta-lactam administration will be optimized by providing extended infusion cefepime and piperacillin/tazobactam at doses recommended by the HAP and VAP guidelines if indicated. A Monte Carlo simulation may be run to ensure probability of target attainment of 90% on select patients. Patients will be

followed daily by a clinical pharmacist. When patients meet clinical criteria for resolution, and after at least 7 full days of treatment, a call will be made to the physician recommending discontinuation of anti-pseudomonal therapy. If the recommendation is not accepted, an additional call will be made on days 10 and 14.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-165

Poster Title: Effect of pharmacist education on methylnaltrexone prescribing habits

Primary Author: Keith Pohlman, St. Rita's Medical Center, OH; **Email:** kapohlman@mercy.com

Additional Author (s):
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Purpose: St. Rita's Medical Center utilizes methylnaltrexone three to four times more frequently than any other institution within the Mercy Health System for the treatment of opioid-induced constipation (OIC). This may be due to inappropriate prescribing habits stemming from a lack of understanding of the OIC treatment algorithm and the pharmacokinetics of methylnaltrexone. The primary objective of this study is to determine the effect health care professional education has on the appropriate use of methylnaltrexone.

Methods: This study has been approved by the Institutional Review Board at St. Rita's Medical Center. Patients who received a dose of methylnaltrexone for OIC from November 1st, 2015 through February 29th, 2016 will be reviewed through a retrospective drug utilization evaluation for appropriateness of use. All patient data will be de-identified. Doses of methylnaltrexone will then be classified as either appropriate or inappropriate. Methylnaltrexone doses considered to be appropriate will meet all of the following criteria: patient was taking an opioid regimen; there is no documentation of a bowel movement for at least 48 hours prior to methylnaltrexone use; patient was receiving a stimulant laxative in combination with a stool softener, osmotic laxative, or magnesium salt for three days prior to methylnaltrexone use; and a bowel movement was recorded after the first dose of methylnaltrexone to indicate patient response prior to receiving any subsequent doses. Physician, pharmacist, and nursing education will be performed in October 2016. Another drug utilization evaluation will then be performed from November 1st, 2016 through February 28th, 2017 to assess the effect this education has on appropriate methylnaltrexone use. This assessment will adhere to the same parameters that were previously mentioned.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-166

Poster Title: Decreasing duration of antimicrobial therapy in patients with hospital-acquired pneumonia at St. Rita's Medical Center

Primary Author: David Jordan, St. Rita's Medical Center, OH; **Email:** djordan2@mercy.com

Additional Author (s):
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Purpose: The Infectious Disease Society of America (IDSA) and the American Thoracic Society (ATS) recently published updated guidelines regarding the management of adults with hospital-acquired pneumonia in July 2016. The primary objective of this study is to decrease the total duration of antimicrobial therapy for hospital-acquired pneumonia for inpatients at St. Rita's Medical Center from November 1, 2016 to February 28, 2017 compared to duration of therapy from November 1, 2015 to February 29, 2016.

Methods: This study was submitted to the Institutional Review Board and was approved on September 19, 2016. Adult patients who develop pneumonia at least 48 hours after admission to St. Rita's Medical Center will be selected and analyzed for inclusion into this study. Information from the patient chart will be reviewed, and the following data will be collected: duration of antimicrobial therapy in the hospital, duration of antimicrobial therapy at discharge, time to de-escalation of antimicrobial therapy, and if discharge medication reconciliation was performed by a clinical pharmacist. This data will be recorded in a spreadsheet where the patients will be de-identified. The data collected will include a patient assigned number and the unit in which the patient resided while at St. Rita's Medical Center. Physicians and pharmacists will be educated on the updated guidelines through clinical pearls, flyers, and newsletters. The data from November 2015 to February 2016 will be compared to the data from November 2016 to February 2017 to see if the duration of antimicrobial therapy in patients with hospital-acquired pneumonia has decreased.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-167

Poster Title: Alert fatigue reduction: The impact of dosage alert changes in a large health system

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Additional Author (s):
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Purpose: Alert fatigue is a known and prevalent issue in today's technology oriented healthcare field. The primary objective of this study is to reduce the number of dosage alerts provided to ordering users. The secondary objective of this study is to improve physician and pharmacist perception of alerts within the system.

Methods: Institutional Review Board approval has been obtained for this study. Dose alerts registered throughout the entire health system during a defined two day period will be collected by the electronic record application coordinator. The five medications that most frequently register dose alerts will be evaluated for appropriateness related to the specific patient's characteristics by the researcher. Additionally, the ten most frequently fired alerts that have been identified through the use of the 'Inaccurate Warning" option during alert override will be evaluated by the researcher for appropriateness. Through a series of predetermined channels, all alerts that are determined to be firing inappropriately by the researcher will be addressed and modified when possible. The change in the number of alerts will be determined through percent change data before and after intervention. These numbers will also be compared to the average number of alerts displayed to EPIC users in general. To evaluate the changes perceived by physicians and pharmacists, a pre and post-intervention survey will be distributed to the hospitalists and pharmacists of one facility within the health system. Follow-up will occur with as many of both parties that can be reached to review actual interventions made after the post-intervention survey has been distributed and the deadline for survey submission has been reached.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-168

Poster Title: Evaluation of the safety and economic impact of an antibiotic allergy protocol in a tertiary medical center

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Additional Author (s):
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Purpose: Approximately, 8% of the population is reported to have a penicillin allergy in the United States. Among patients who report an antibiotic allergy, only 10% have a true IgE-mediated hypersensitivity reaction. Antibiotic allergy protocols maybe a helpful tool to determine if patients have a IgE-mediated reaction. Using a step-wise approach protocol to assess patients with a history of penicillin allergy can prevent the misuse of antibiotics and reduce resistance. The goal of this project is to develop and implement a safe and valid assessment tool to determine patient ‘s antibiotics allergy status and reduce the antibiotics cost for the hospital.

Methods: Patients will be screened for Beta-lactam antibiotic allergies in the electronic medical record. Once patients are identified, pharmacists will perform a face-to-face or telephone interview with either patients or family members. Pharmacists will be using a standardized medication allergy assessment form, which is developed by the department of Pharmacy to determine patient allergy status. Pharmacists will not change patient’s allergy record in the electronic medical record without the confirmation of penicillin skin test or physician consultation. Pharmacists will then make recommendations to the prescriber based on clinical guidelines, protocols and local antibiotic resistance patterns. The primary investigator of the study will create the allergy assessment form and will be heavily involved in patient interviews and making recommendations. The patient will be followed for clinical outcomes and adverse reactions up to seven days beginning on first day of transitioning to Beta-lactam antibiotics. Primary outcome measures are the number of patients with listed Beta-lactam allergy that tolerated Beta-lactam antibiotics after evaluation, and the percentage changes in antibiotics

prescribed after pharmacist's recommendation. Secondary outcomes included cost reduction, length of antibiotic treatment, mortality rate, hospital length of stay and incidences of C.difficile infection, acute kidney injury, gastrointestinal symptoms and infusion-related reactions.

Results: Working in progress

Conclusion: Working in progress

Submission Category: Cardiology/ Anticoagulation

Submission Type: Evaluative Study

Session-Board Number: 12-169

Poster Title: Effectiveness and safety of twice daily versus thrice daily subcutaneous unfractionated heparin for venous thromboembolism prophylaxis at a tertiary medical center

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Purpose: The American College of Chest Physicians' guidelines for the prevention of venous thromboembolism (VTE) recommend low-dose unfractionated heparin (LDUH) as an option to prevent VTE in patients at increased risk. The guidelines do not provide a recommendation with regards to twice daily (BID) versus thrice daily (TID) LDUH because there is a lack of head-to-head trials comparing these dosing frequencies. Meta-analyses evaluating safety and effectiveness of BID and TID dosing did not include trials that directly compared the two. Due to the lack of direct comparisons, our study evaluated the effectiveness and safety of LDUH dosed BID versus TID.

Methods: The institutional review board approved this retrospective study under expedited review. This cohort evaluated 5,000 patients, age 18 years or older, admitted to the tertiary medical center who received subcutaneous LDUH BID or TID for VTE prophylaxis between July 31, 2015 and September 30, 2015. Patients who received low molecular weight heparin or fondaparinux, or both BID and TID dosing of LDUH for at least 48 hours during admission, and those treated with therapeutic anticoagulants for a duration greater than 48 hours before initiation of LDUH were excluded. Data collected included patient demographics, risk factors for VTE and bleeding, hospital length of stay, missed doses of LDUH, and incidence of VTE and major and minor bleeding as identified by ICD-9 codes. For the univariate analysis, nominal data was evaluated using Chi-Square and Fisher's Exact Test, and continuous data was analyzed with ANOVA. Patients were matched using propensity score matching and multivariable logistic regression analysis was performed for the primary outcome. The primary outcome was the

incidence of VTE with BID versus TID dosing of subcutaneous LDUH for VTE prophylaxis. The secondary outcomes assessed differences in the incidence of major and minor bleeding events.

Results: A total of 4,188 patients were included for analysis. In the full analysis, the primary outcome of VTE occurred in 0.71% of patients who received LDUH BID compared to 0.77% of patients who received LDUH TID (p = 0.85). The secondary outcome of major bleed occurred in 0.71% of patients in the BID arm compared to 0.77% of patients in the TID arm (p = 0.85), and minor bleed was seen in 2.3% compared to 1.9% of patients in the BID and TID arms respectively (p = 0.52). For the matched cohort, VTE occurred in 1.4% of BID patients and 2.1% of TID patients (p = 0.32). Major bleed occurred in 0.36% of BID patients and 0.52% of TID patients (p = 0.7), while a minor bleed was seen in 3.4% of BID patients and 2.1% of TID patients (p = 0.13). The multivariable analysis within the matched cohort demonstrated that both personal history of VTE (OR 1.3482; 95% CI 0.4949-2.2016; p = 0.002) and weight (OR 0.0089; 95% CI 0.0006-0.0172; p = 0.035) were independently associated with an increased risk of VTE.

Conclusion: This study did not demonstrate a difference in effectiveness or safety between BID and TID dosing of LDUH for the prevention of VTE. Several patient characteristics were noted to be significantly different between the two treatment groups, which suggests these patients may have differed in regards to overall VTE risk. Future evaluation with a larger cohort and subgroup analyses will allow better investigation of these differences

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-170

Poster Title: Retrospective review of the comparative effectiveness between antipsychotics used to treat intensive care unit-related delirium

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Purpose: Delirium in critically ill patients contributes to prolonged hospital and intensive care unit (ICU) length of stay as well as increased mortality. Many antipsychotic medications have been studied in clinical trials to evaluate their effectiveness in treating ICU-related delirium; however, results have been inconclusive. The objective of this retrospective chart review is to examine the comparative effectiveness of ICU delirium resolution among antipsychotic medications. Secondary outcomes include time to resolution of delirium, length of stay, use of mechanical ventilation, and mortality.

Methods: A single-center retrospective chart review will be performed at a large, community teaching hospital evaluating patients admitted to the medical, cardiovascular, or surgical intensive care units (ICUs) between January 2015 and December 2016. Medications to be included are haloperidol, risperidone, valproic acid, olanzapine, quetiapine, and ziprasidone. Patients eligible for inclusion must be 18 years or older, admitted to the ICU for greater than 72 hours, and have received an included study medication. Patients must have a negative Confusion Assessment Method for the ICU (CAM-ICU) score at admission followed by a positive score during hospitalization in the ICU. Patients with a history of psychiatric illness that are restarted on home therapy (involving one or more of study medications) within 48 hours of ICU admission will be excluded. Additionally, patients will be excluded if pregnant or received valproic acid for management of seizures. Data will be collected via electronic medical records. Data to collect includes: demographic data; prior medical history; prior to admission medications; admission location; CAM-ICU scores; baseline QTc; APACHE score; evidence of

metabolic acidosis; urea concentration at admission; sedative used if on mechanical ventilation; time to onset of delirium; signs and symptoms documented by medical staff; any psychiatric consults; discharge disposition; and documentation supporting delirium subtype (hypoactive, hyperactive, or mixed). For study medications: name, dose, frequency, route, and length of therapy will be recorded.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-171

Poster Title: Evaluation of pharmacy interventions in an academic outpatient transition of care clinic

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Purpose: Pharmacist interventions in a patient's transition between levels of care have been proven to directly impact clinical outcomes through the identification of medication-related problems. The Transition of Care (TOC) Clinic was established in November of 2015 in an effort to improve continuity of care for patients recently discharged from the hospital. The purpose of this study is to evaluate the impact of pharmacist interventions made in the TOC Clinic on the rate of hospital readmissions and emergency department visits.

Methods: This is an IRB-approved, single-center, retrospective study of Internal Medicine Clinic patients who were discharged from the hospital medicine service between November 1st, 2014 and October 31st, 2016. Patients will be divided into pre- and post-implementation periods of the TOC Clinic (November 1st, 2014 through October 31st, 2015 and November 1st, 2015 through October 31st, 2016). Patients will be excluded if they were not discharged home. Additionally, patients in the post-implementation group will be excluded if they were not scheduled for a TOC appointment following discharge or were not seen by a pharmacist at their appointment. Data will be collected from electronic medical records and will consist of baseline demographic information; hospital, emergency department visit, and clinic visit information; and pharmacy interventions categorized into medication therapy management, safety, non-compliance, and miscellaneous interventions. Data collection is in progress. The primary endpoint of this study is the difference in composite rate of 30 day readmissions and emergency department visits before and after the establishment of the Transition of Care Clinic. Secondary endpoints include rate of 60 day readmissions and emergency department visits before and after implementation, rate of death at 30 and 60 days after discharge,

frequency of phone calls to healthcare providers, and characterization of pharmacy interventions made in this clinic. Baseline characteristics and readmission rates will be analyzed for significance utilizing the chi-squared test.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-172

Poster Title: Outcomes of an inpatient pharmacist-led discharge intervention on medication-related problems post-discharge

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Purpose: Pharmacist involvement in transitional care management of medications has led to decreased medication discrepancies post-discharge, improved communication among health care providers, and reduction of medication-related hospital readmission rates. While pharmacists may contribute to aiding patients in their transition from hospital to home, the role of the pharmacist in this area of practice is not well-defined. Currently, Good Samaritan TriHealth Hospital has no formal process in place to evaluate changes in a patient's medications prior to discharge. The purpose of this study is to evaluate the impact of an inpatient pharmacist-led discharge intervention on the incidence of medication-related problems post-discharge.

Methods: This study will be submitted to the TriHealth Institutional Review Board for approval. "High risk" patients for readmission will be identified from the medical resident internal medicine service for inclusion in the study. "High risk" patients are defined as patients who meet any of the following criteria: 1) discharged on 3 or more new medications not listed on the home medication list prior to admission; 2) discharged on a new high-alert medication; 3) admitted for treatment of uncontrolled symptoms of 2 or more of the following chronic disease states: diabetes mellitus (types 1 or 2), chronic heart failure, hypertension, or COPD, and were not initially diagnosed with the disease state upon the admission being studied; 4) admitted with 10 or more documented maintenance prescription or over-the-counter medications prior to admission (excluding nursing home patients). The study group will receive a pharmacist-led intervention prior to discharge consisting of a face-to-face interview with the patient to assess barriers to medication adherence, provide medication education, and creation of a patient-

specific medication plan in collaboration with the physician. The control group will receive the current standard of care prior to discharge. All patients will be evaluated for outcomes of medication-related problems via phone calls at 3, 14, and 30 days post-discharge. Other outcomes of consideration include severity of potential adverse effects, and reduction in 30-day all-cause readmission rates.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-173

Poster Title: Cost analysis and length of stay associated with linezolid versus vancomycin use in methicillin-resistant Staphylococcus aureus pneumonia in a regional health organization

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Purpose: Core elements warranting this project as timely and relevant include the recent price reduction in direct drug cost of linezolid, increasing occurrence of elevated vancomycin MIC, and IDSA pneumonia guidelines parring vancomycin and linezolid with considerations for patient-specific factors. Economic analyses to date have extrapolated data from RCTs as opposed to real world data with actual utility. Value in this project will be derived from awareness of recent usage, clinical outcomes, and cost of treatment between the medications. Additionally, data derived from this study may have implications on current practice and necessitate further discussion

Methods: This is an IRB approved retrospective cohort review with the primary goal of comparing overall cost of treatment and length of stay for patients diagnosed with pneumonia and treated with linezolid or vancomycin. Secondary outcome measures include clinical success and failure, adverse drug events, duration of antibiotic therapy, ancillary service costs, and all-cause mortality. Data from patient records and cost histories for the TriHealth health system of Cincinnati, Ohio will be accessed utilizing EPIC, Premier QualityAdvisor, and Data Warehouse. Participant records from January, 2015 to March, 2017 will be analyzed and compared for treatment of confirmed or presumed MRSA pneumonia. The linezolid group will be identified through QualityAdvisor generated reports, and the vancomycin comparative cohort will be randomly selected through 1:1 risk stratification classification. Subject balance will be established by use of 3M risk scoring and give consideration to whether or not the patients were mechanically ventilated, treated in the ICU, or diagnosed with HCAP versus HAP/VAP as these factors independently contribute to costs. Data to be viewed, recorded, and analyzed include patient demographics, location of treatment, diagnoses, comorbidities, concurrent

medications, hospital-administered medications, method of ventilation, renal function, dialysis status, radiology and microbiology findings, other important laboratory results including procalcitonin, and permanent medical record information detailing clinical outcomes. Primary and secondary endpoints will be analyzed between groups using appropriate statistical tests.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-174

Poster Title: Impact of pharmacist intervention on Primary Care 10 (PC10) measures in primary care practices

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Purpose: Primary Care 10 (PC10) metrics established for St. Rita's Professional Services (SRPS) assess quality of care for outpatient practices. Practices not meeting standards are seeking methods to do so. Literature supports the incorporation of pharmacists within healthcare teams. This study seeks to determine the impact of pharmacist intervention on two PC10 measures: blood pressure control and pneumonia vaccination status. This information will provide supporting evidence to current literature and may provide insight for practices to improve PC10 scores. It may also build a foundation to perform a future return on investment to assess the utility of pharmacists in outpatient practices.

Methods: This is a descriptive, prospective cohort of patients seen between October 15, 2016 and March 31, 2017 in two of the SRPS outpatient practices. There are three study arms: blood pressure control, pneumonia vaccination status, and diabetes clinic referral. Patients will be included in the appropriate study arm if they meet the following criteria: adults at least 18 years old, blood pressure of greater than or equal to 140/90, are a candidate for pneumococcal vaccination, and have an A1c greater than nine percent. Patients will be excluded if they are pregnant or receiving hospice care. The appropriate data will be collected for patients within each study arm and progress notes will be documented, by the pharmacist, in the electronic medical records at each patient visit. Pharmacist intervention will be in accordance with the Eighth Joint National Committee guidelines and Centers for Disease Control recommendations. The primary outcome will be described as the score for the PC10 measures, blood pressure control and pneumonia vaccination status, during each month of the study period. The secondary objective will be described as the proportion of patients with an A1c greater than nine percent who accept a diabetes clinic referral and the reasons for declining such a referral.

This study will be submitted to the Institutional Review Board for approval and informed consent will be obtained from all study participants.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-175

Poster Title: Impact of a pharmacist-led transitions of care model in patients with a primary admission diagnosis of congestive heart failure exacerbation

Primary Author: Olivia Huprich, The Jewish Hospital, OH; **Email:** ohuprich@mercy.com

Additional Author (s):
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Cathy Jenkins

Purpose: There has been a nationwide spotlight on readmission rates in heart failure patients since Congress enacted the Hospital Readmissions Reduction Program. Transitional-care programs have been implemented in hospitals across the country to improve outcomes in the transition between the inpatient and outpatient settings. However, the types of interventions that reduce readmission rates are not well established. A number of studies have demonstrated pharmacist involvement significantly reduces heart failure readmission rates. The purpose of this study is to identify the impact of pharmacist-led interventions on 30-day readmission rates in patients admitted with a primary diagnosis of congestive heart failure exacerbation.

Methods: The study population will include patients admitted to The Jewish Hospital's cardiology group in November 2016 with a primary diagnosis of congestive heart failure exacerbation. Patients will be identified according to their primary admission diagnosis in the electronic medical record. Within 48 hours of admission, patients in the intervention group will have home medications reconciled with the medication list in the electronic medical record by a pharmacy intern, pharmacy resident, clinical pharmacist, or staff pharmacist. Patients will be followed peripherally by the pharmacy resident throughout the duration of hospitalization who will aim to optimize adherence with guideline based therapy. At discharge, the resident will reconcile the physician's discharge summary with the after visit summary and the discharge medication orders. The resident will provide discharge counseling and offer to fill and deliver the patient's new medications to their bedside through the hospital's MedstoBeds service. Finally, the resident will ensure the patient has an appointment for outpatient follow-up within 7-10 days after discharge. The resident will also follow-up via telephone with the patient within 3 days of discharge to ensure there are no acute issues with medications or changes in overall clinical status.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-176

Poster Title: Vancomycin dosing in obese patients: a retrospective case-control study

Primary Author: Mallory Houtchens, The Jewish Hospital - Mercy Health, OH; **Email:** mhoutchens@mercy.com

Additional Author (s):
Holly Lawhorn

Purpose: Currently there is no standardized guideline or clear recommendation for dosing vancomycin in obese patients (body mass index of at least 30 kilograms per meter squared). Infectious Diseases Society of America recommendations for empiric vancomycin dosing often do not result in therapeutic vancomycin troughs in obese patients, and can result in inadequate dosing. Reaching a therapeutic vancomycin trough sooner ensures that patients are being treated at the minimally effective concentration. This study's aim is to determine if our institution's current efforts in dosing vancomycin in the obese population is sufficient by comparing our success rates with that of non-obese patients.

Methods: This study will be a single-center case-control retrospective chart review of at least 120 cases and 60 controls who received at least three doses of vancomycin. Cases will be matched with controls based on type of infection and goal trough, comorbidities, age, presence of other nephrotoxic medications, and presence of baseline renal dysfunction. The electronic medical record will be used as the source of patient data. The primary outcome is the time to therapeutic vancomycin trough in hours. Secondary outcomes include length of stay, initial vancomycin trough level, development of acute renal dysfunction, length of time between first dose and first trough drawn in hours, and dose of vancomycin. The following data will be collected: patient age, gender, height, actual and ideal body weights, body mass index, past medical history, infection being treated with corresponding vancomycin trough goal, timing of drawn vancomycin levels, renal function, and other nephrotoxic agents used concomitantly with vancomycin. A clinically significant difference between groups has been defined as a time to target vancomycin trough difference of at least 24 hours.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-177

Poster Title: Sub-dissociative ketamine for analgesia in the emergency department (ED)

Primary Author: John DeLeon, The Toledo Hospital and Toledo Children's Hospital, OH; **Email:** john.deleon@promedica.org

Additional Author (s):
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Kristen Thomas
Michael Rudoni

Purpose: Ketamine is a general anesthetic approved for procedural sedation with hypnotic, amnestic, and analgesic properties. Evidence exists that support the use of sub-dissociative ketamine in patients in the ED setting for analgesia as an adjunct to traditional agents. An institution-specific clinical protocol was developed to standardize administration of sub-dissociative ketamine in adult patients who present to the ED with acute moderate to severe pain not relieved by opiate analgesics. The purpose of this study is to determine the efficacy and safety of sub-dissociative ketamine use based on an institution-specific protocol.

Methods: This single-center, non-randomized, retrospective study will be submitted to the Institutional Review Board for approval. Adult patients 18 years or older presenting to the ED with acute moderate to severe pain not relieved by opiate analgesics will be included. The exclusion criteria will include pregnancy, weight less than 49 kg or greater than 115 kg, systolic blood pressure (SBP) less than 90 mmHg or greater than 180 mmHg, heart rate (HR) less than 50 or greater than 150 beats per minute, and respiratory rate less than 10 or greater than 30 breaths per minute. The following data will be collected: patient age, gender, weight, SBP, diastolic blood pressure (DBP), HR, respiratory rate, pain scores, ketamine dose administered, concomitant medications, and reported adverse medication events. All data will be recorded without patient identifiers and maintained confidentially. The primary outcome of the study will evaluate efficacy of the protocol by measuring differences in pain scores, heart rate, and blood pressure before and after ketamine administration. The secondary outcome will evaluate any adverse effects and reactions observed after ketamine administration.

Results: not available

Conclusion: not available

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-178

Poster Title: Assessing appropriate use of aztreonam

Primary Author: Malihe Hosseini, The Toledo Hospital/Toledo Children's Hospital, OH; **Email:** malihe.hosseini@promedica.org

Additional Author (s):
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Purpose: The monobactam structure of aztreonam makes cross reactivity with beta lactam allergies unlikely; therefore, it is primarily used when a beta lactam allergy is present. Currently, the only approved indication of aztreonam at our institution is for aerobic gram negative infections in patients with documented allergic reactions to beta lactam antibiotics. The purpose of this quality improvement project is to assess the appropriate use of aztreonam based on our institutional guidelines.

Methods: This is a single center, retrospective chart review that will be approved by the Institutional Review Board. All adult patients that received at least one dose of intravenous aztreonam between 01/01/2015 through 12/31/2015 will be included. Pediatric patients and patients on inhaled aztroenam will be excluded. The following data will be collected: age, sex, documentation of beta lactam allergy, aztreonam dose and frequency, duration of therapy, prescriber, and documentation of successful administration of penicillin or cephalosporin antimicrobials one year prior to aztreonam therapy. Beta lactam allergies will be defined as follows: Severe (anaphylaxis, difficulty breathing, tongue swelling, seizure, or allergic interstitial nephritis), moderate (rash or hive) or beta lactam allergy with no reaction listed. The primary objective of this project is to quantify the number of patients that received aztreonam appropriately based on our institutional guidelines.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-179

Poster Title: Evaluation of PlasmaLyte on intraoperative acidosis in patients who undergo cardiopulmonary bypass

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Additional Author (s):
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Mark Bonnell
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Purpose: Fluid management plays an important role in patients undergoing cardiopulmonary bypass. Normal saline (NS) has a pH of 5.4 and an unbalanced electrolyte profile (Na 154 mEq/L and Cl 154 mEq/L) compared to human serum. Hyperchloremic acidosis is currently a concern with NS administration. PlasmaLyte contains electrolyte concentrations and pH similar to serum (Na 140 mEq/L, Cl 98 mEq/L, acetate 27 mEq/L, gluconate 23 mEq/L, K 5.0 mEq/L, Mg 3.0 mEq/L, pH 7.4). The objective of this study is to compare the incidence of acidosis between patients receiving PlasmaLyte and NS intraoperatively when examining final intraoperative arterial blood gas values.

Methods: This study will be submitted to the Institutional Review Board for approval. The Society of Thoracic Surgeons database will identify patients who have undergone cardiothoracic surgery requiring cardiopulmonary bypass at UTMC. The following data will be collected: patient age, gender, weight, height, comorbid conditions, type of surgery, duration of surgery, time on cardiopulmonary bypass, postoperative length of stay, intraoperative fluid balance, 24-hour fluid balances, arterial blood gases, systolic blood pressures, central venous pressures, amounts of bicarbonate administered, amount of albumin administered, basic metabolic panels, lactates, serum osmolalities, intubation duration, vasopressor duration, mortality, new-onset atrial fibrillation, and acute renal failure. Base excess less than -2 will be used to define acidosis on the last intraoperative arterial blood gas. Appropriate statistical tests will be performed. Differences in postoperative length of stay, duration of vasopressors, time to

extubation, in-hospital mortality, 30-day mortality, incidence of new-onset atrial fibrillation, and acute renal failure will also be compared between groups.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-180

Poster Title: Effect of a sedation protocol revision on sedative use in the medical intensive care unit (MICU)

Primary Author: Sebastian Al-Saiegh, The University of Toledo Medical Center, OH; **Email:** sebastian.al-saiegh@utoledo.edu

Additional Author (s):
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Purpose: Patients in the intensive care setting requiring mechanical ventilation often receive sedatives to manage their pain, anxiety, or agitation. Studies have identified sedative medications as risk factors for extended mechanical ventilation duration, intensive care unit length of stay, and increased incidence of ventilator-associated events (VAE). This project aims to evaluate the impact of daily sedation interruption (DSI) and education on sedative use in the MICU at an academic medical center. The primary endpoint compares sedative use after implementing an automatic DSI and educating physicians and nurses. Secondary endpoints include evaluating effects on VAEs, pain scores, and MICU length of stay.

Methods: A retrospective chart review will be conducted pre- and post-sedation protocol implementation. All patients over 18 years of age, admitted to the MICU at an academic medical center, and mechanically ventilated from August 1, 2013 to November 30, 2014 (pre-implementation) and December 1, 2015 to May 31, 2016 (post-implementation) will be included. Exclusion criteria include: pregnant patients, those whom life-sustaining support was withdrawn or expired within 48 hours of admission, those patients using sedatives for purposes other than sedation, and those remaining in the MICU after the study's stop date. An electronic medical record system will be used to retrieve the following patient data: name, medical record number, age, sex, height, weight, hospital admission date and diagnosis, MICU admission date and diagnosis, MICU and hospital length of stay (LOS), duration on mechanical ventilation, Acute Physiology and Chronic Health Evaluation (APACHE II) score, Riker Sedation-Agitation Scale (SAS) scores, pain and agitation scores, sedatives and opioids administered, neurologic diagnostic studies, ventilator-associated events, self-extubations, re-intubation, and survival to discharge. This project has been submitted for Institutional Review Board approval. Appropriate statistical analyses will be used to define primary and secondary objectives.

Results: N/A

Conclusion: N/A

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 12-181

Poster Title: Impact of a continuous local anesthetic pain ball on post-operative pain in kidney transplant recipients

Primary Author: Eric Betka, The University of Toledo Medical Center, OH; **Email:** eric.betka@utoledo.edu

Additional Author (s):
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Purpose: A multi-modal approach for the management of post-operative pain utilizing local anesthetic wound infiltrations, such as the ON-Q pain ball, has gained momentum over the last decade. This multi-modal approach has proven to be efficacious for reducing post-operative opioid consumption and opioid- related complications in procedures involving the abdominal wall. However, data are controversial in regards to this multi-modal approach for renal transplant (RT) recipients. The objective of this study is to determine the effectiveness of a continuous wound infusion of local anesthetic in the reduction of post-operative opioid consumption compared to traditional post-operative pain management in RT recipients.

Methods: This retrospective cohort study was approved by the Institutional Review Board at The University of Toledo Medical Center (UTMC). Patients 18 years and older admitted to UTMC from July 1, 2006 through July 30, 2016 with an International Classification of Diseases (ICD) 9 or 10 code correlating to end stage renal disease or kidney transplantation will be screened for inclusion into the study. Eligible patient will have undergone kidney transplantation during the specified time period. The following data will be collected: age, gender, type of post-operative pain management regimen, type of transplant, post-operative pain scores, and post-operative opioid requirements. The primary endpoint will be the cumulative opioid consumption in intravenous morphine equivalents at 24, 48, and 72 hours following transplantation. Secondary outcomes will include the difference in post-operative pain scores (24, 48, and 72 hours), hospital length of stay, surgical wound infections, and a sub-group analysis of recipients of living donor versus deceased donor transplants.

Results: Data collection in progress.

Conclusion: To be determined.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-182

Poster Title: Compliance with surviving sepsis guidelines: correct timing of antibiotics at presentation

Primary Author: Courtney Hochman, UH Regional Hospital Richmond Campus, OH; **Email:** courtney.hochman@uhhospitals.org

Additional Author (s):
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Purpose: The surviving sepsis campaign recommends that broad spectrum antimicrobial therapy be initiated within the first hour of presentation in patients with septic shock or severe sepsis without septic shock. Many articles have been published showing benefit to overall mortality with the initiation of empiric therapy in a timely manner. The initiation of broad spectrum antimicrobial therapy is found in the three hour bundle of the campaign. The purpose of this medication-use evaluation is to determine if there is variance in the recommended initiation within one hour of recognition of septic shock or severe sepsis without septic shock at our institution.

Methods: At our institution, an order set has been developed with guidance of the surviving sepsis campaign. It contains definitions of sepsis, severe sepsis, and septic shock. This order set includes the option to select from recommended broad spectrum antibiotics. When these orders are selected there is a special designation for immediate need for these medications and it appears in red as a stat order in the pharmacy queue. This research evaluates patients with a diagnosis of sepsis from January to August 2016. The actual administration time of broad spectrum antibiotics from the time of presentation is the primary outcome. This data will be analyzed in comparison to the time of presentation with septic shock or severe sepsis without septic shock. Additional information that will be analyzed includes: if blood cultures were drawn pre- or post-antibiotic administration, appropriate antibiotic use, if antibiotics were deescalated appropriately based on cultures, lab results, vital signs, order time, and time of presentation to the emergency department, and patient demographics. This data will be used to determine time to administration of empiric antimicrobial therapy in relation to a patient presentation with sepsis.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-183

Poster Title: Evaluation of prothrombin complex concentrate guideline compliance at a large academic medical center

Primary Author: Brian Lauer, University Hospitals Cleveland Medical Center, OH; **Email:** brian.lauer2@uhhospitals.org

Additional Author (s):
Jason Makii

Purpose: For the reversal of warfarin associated intracranial hemorrhage and major bleeding with an INR > 1.4, it is recommended to use intravenous vitamin K (5-10 mg) along with 4-factor PCC over the use of vitamin K and either 3-factor PCC or FFP. The current procedure at University Hospitals Cleveland Medical Center is to use PCC for life-threatening intracranial/spinal cord hemorrhage associated with warfarin or for reversal of serious bleeds associated with oral anticoagulants with hematology consult. The purpose of this study is to evaluate the compliance with the use of PCC with respect to the institutions reversal guidelines.

Methods: This study was submitted to the Institutional Review Board for approval. This retrospective cohort study will take place from January 1st, 2015 to December 31st, 2015 including all patients receiving PCC for reversal of severe/life threatening bleeding or within the operating room. Patient's electronic medical records will be reviewed for the necessary data variables. Individuals will be stratified according to indication for PCC. The estimated sample size will be approximately 100 patients. Variables to be collected include: age, race, admitting diagnosis, location where PCC was administered, indication for PCC, hematology consultation recommendations, dose of PCC administered, coagulation markers, documented hemostasis 12 hours post administration, hemoglobin/hematocrit at baseline and 24 hours post administration, documented thrombosis within 7 days of administration, charting documentation of dose administration, concomitant administration rates of alternative reversal agents (vitamin K, fresh frozen plasma, idarucizamab, rFVIIa, platelet transfusion), and imaging studies demonstrating hemorrhage. The primary endpoint is the compliance rate with reversal guidelines defined as guideline approved indication and guideline recommended dose for the specified indication.

Results: To be presented

Conclusion: To be presented

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-184

Poster Title: Evaluation of the efficacy of bivalirudin and argatroban titration nomograms in an institutional heparin induced thrombocytopenia and thrombosis syndrome guideline

Primary Author: Lindsey Rayhill, University Hospitals Cleveland Medical Center, OH; **Email:** lindsey.rayhill@uhhospitals.org

Additional Author (s):
Robert Barcelona
Jessica Traeger

Purpose: The primary goal of this medication use evaluation is to evaluate the efficacy of the bivalirudin and argatroban titration nomograms in a heparin-induced thrombocytopenia and thrombosis syndrome (HITTS) guideline at University Hospitals Cleveland Medical Center. The guideline is intended to be used in patients with a high suspicion for HITTS or patients with HITTS confirmed by laboratory results. This study will also assess documentation of heparin allergy in patients with HITTS and the safety of and adherence to the institutional guideline.

Methods: This study will be submitted to the Institutional Review Board for approval. Data will be collected retrospectively from the institution's medical record. Adult patients who received bivalirudin or argatroban through the HITTS order set from July 1, 2015 to June 30, 2016 will be included. Patients will be excluded if they received bivalirudin or argatroban for less than 48 hours, received bivalirudin or argatroban for indication other than suspected HITTS, have a known history of HITTS, or if the work up for HITTS was initiated at an outside hospital. Data to be collected includes: baseline platelet count, platelet nadir, time from heparin initiation to platelet nadir, 4 T's score, heparin platelet factor 4 enzyme assay results, serotonin release assay results, use of bivalirudin or argatroban, duration of direct thrombin inhibitor (DTI) therapy, activated partial thromboplastin time levels, titration of DTI, units of blood transfused, documentation of heparin allergy, and length of hospital stay. Data will be collected and maintained in REDCap™, a secure database.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 12-185

Poster Title: Rasburicase at University Hospitals Cleveland Medical Center: A retrospective medication use evaluation

Primary Author: Melissa Copley, University Hospitals Cleveland Medical Center, OH; **Email:** melissa.copley@uhhospitals.org

Additional Author (s):
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Andreea Popa

Purpose: Tumor lysis syndrome is a life-threatening emergency characterized by a group of metabolic derangements due to abrupt release of intracellular contents following lysis of malignant cells. Hyperuricemia associated with malignancy can result in acute kidney injury or even death. Rasburicase is a recombinant urate oxidase enzyme FDA-approved for treatment of hyperuricemia associated with malignancy. Rasburicase converts uric acid to an inactive soluble metabolite allantoin which can be excreted through the urine. The primary objective of this study is to evaluate the adherence to the rasburicase use guidelines and order set at UHCMC for management of hyperuricemia associated with malignancy.

Methods: This study is in the process of being submitted to the Institutional Review Board for approval. The design of the research is a single-center, retrospective chart review of adult patients 18 years and older who received at least one dose of rasburicase for hyperuricemia associated with malignancy during an inpatient hospitalization at UHCMC from August 1st, 2015 through July 31st, 2016. Information collected includes: patient demographics (patient, age, sex, weight), hospital location, oncologic diagnosis, hematology consult, date of last cytotoxic chemotherapy dose, therapies used prior to rasburicase administration (allopurinol, hydration), dosage and frequency of allopurinol, length of time on allopurinol, documentation of allopurinol allergy, indication for rasburicase use, rasburicase dose, repeat dosing, administration time for rasburicase, uric acid levels and other lab values (potassium, phosphorus, calcium) prior to and following rasburicase use, time drawn for lab values, number of uric acid levels per patient, and G6PD status. Data will be extracted using the electronic medical record and pharmacy databases. Data collection for this study will take place at UHCMC and will be maintained in REDCap™, a secure database.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-186

Poster Title: Carbapenem drug-use evaluation at a large, academic medical center

Primary Author: Derek Michalski, University Hospitals- Cleveland Medical Center, OH; **Email:** derek.michalski@uhhospitals.org

Additional Author (s):
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Purpose: The broad-spectrum activity of carbapenems has led to their overuse in certain clinical situations, which has led to an increase in the development of multi-drug resistant organisms that are difficult to treat and associated with higher rates of mortality. In order to ensure ertapenem, meropenem, and other select antimicrobials are used appropriately, the institution's Antimicrobial Stewardship Program designed specific usage criteria to optimize antimicrobial therapy. The primary objective of this drug-use evaluation is to determine if the current use of carbapenems (meropenem and ertapenem) within the institution is in accordance with these Antimicrobial Stewardship Program usage guidelines.

Methods: This drug-use evaluation is a prospective, descriptive, single-center chart review. The hospital's electronic medical record and an add-on clinical decision support system will be utilized to identify hospitalized patients greater than or equal to 18 years old who have received at least one dose of ertapenem or meropenem between October 15, 2016 and March 1, 2017 at the study site pending Institutional Review Board approval. The primary objective will be assessed by determining the proportion of patients that were initiated on a carbapenem and meet at least one usage criteria that is listed in the institutional antimicrobial stewardship usage guidelines. In order to assess the study objectives, the following data will be collected: patient age, date of birth, gender, allergy to beta-lactam antibiotics, primary location, service (medical or surgical), drug-related factors, previous antibiotic exposure to select anti-pseudomonal antibiotics, concomitant antimicrobial therapy during carbapenem therapy, infection-related factors, extended-spectrum beta-lactamase (ESBL) producing organism or AmpC beta-lactamase producing organism on culture in past twelve months, and if infectious disease consult was obtained. All data will be de-identified to ensure patient confidentiality.

Descriptive statistics will be utilized to analyze the collected data and proportions will be used to identify adherence rates to the institution's guidelines.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-187

Poster Title: Comparison of adherence to manufacturer dosing recommendations with apixaban, dabigatran, and rivaroxaban therapy

Primary Author: Brittany Snyder, University Hospitals Geauga Medical Center, OH; **Email:** brittany.snyder2@uhhospitals.org

Additional Author (s):
Mate Soric

Purpose: Among the non-warfarin oral anticoagulants, differences in manufacturer recommended dosing strategies may lead to inconsistencies in adherence to dosing guidelines between agents. This study will compare the relative incidence of adherence to manufacturer recommended dosing strategies for apixaban, dabigatran, and rivaroxaban in the treatment of atrial fibrillation.

Methods: A retrospective chart review spanning the dates of 1/1/2013-9/30/15 will be performed. This study will use records from a large integrated health system and will include patients at least 18 years of age receiving apixaban, rivaroxaban, or dabigatran with a diagnosis of non-valvular atrial fibrillation and admitted as inpatient or observation status for at least 24 hours. Exclusion criteria include treatment for deep vein thrombosis (DVT), pulmonary embolism (PE), secondary prevention of recurrent DVT or PE, or postoperative thromboprophylaxis. The primary outcome is the incidence of inappropriate dosing for apixaban, rivaroxaban and dabigatran therapy. Additional data to be collected include age, sex, cardiology consult, history of thrombotic events, concomitant use of p-glycoprotein and CYP3A4 inhibitors, race, serum creatinine, age group (18-50, 51-79, or 80 years of age and older), and HAS-BLED score (hypertension, abnormal renal and liver function, history of stroke or bleeding, labile INRs, elderly, history of drugs or alcohol abuse). A logistic regression model will be developed to identify predictors of prescribing patterns that are inconsistent with manufacturer recommendations. A total study population of 200 will be required to meet power.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-188

Poster Title: Prevalence and predictors of antipsychotic prescribing in adults with Parkinson's disease. A national cross-sectional study.

Primary Author: Richard Chan, University Hospitals Geauga Medical Center, OH; **Email:** richard.chan@uhhospitals.org

Additional Author (s):
Mate Soric

Purpose: The prescribing of antipsychotics in patients that have Parkinson's disease has been associated with a marked increase in mortality. A recent cohort study of the Veterans Health Administration reported that antipsychotic use was associated with more than twice the hazard ratio compared to nonuse in patients with Parkinson's disease. The objective of this study is to evaluate the prevalence of and factors that are associated with prescribing antipsychotic medications in patients with Parkinson's disease in an outpatient population.

Methods: This national cross-sectional study will use data from the National Ambulatory Medical Care Survey (NAMCS) from 2008 through 2013. This study will be submitted to the Institutional Review Board for approval. Upon IRB approval, data sets for the years 2008 through 2013 of the NAMCS will be obtained through the Centers for Disease Control and Prevention website. The de-identified data sets will be combined and evaluated to include patients that are at least 65 years old with diagnosis of Parkinson's disease. Patients who have a diagnosis of bipolar disorder, schizophrenia, Lewy body dementia or secondary Parkinsonism will be excluded from the study. The primary outcome will be the rate of antipsychotic prescribing, as well as the classification of the antipsychotic prescribed, in patients who have Parkinson's disease. Multivariate logistic regression will be used to identify variables that may be associated with prescribing antipsychotics in this patient population, including: patient demographics, payer type, co-morbid conditions and prescriber characteristics.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-189

Poster Title: High-dose methylprednisolone utilization in the emergency department and continued steroid use upon hospital admission.

Primary Author: Leah Schomburg, University Hospitals Richmond Medical Center, OH; **Email:** leah.schomburg2@uhhospitals.org

Additional Author (s):
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Purpose: At our institution, the use of high-dose methylprednisolone is common for exacerbations of respiratory conditions such as asthma or chronic obstructive pulmonary disease. Based on literature, it appears that lower doses of steroids may be as effective as higher doses in the exacerbation of these conditions and result in less adverse effects. The goal of the medication-use evaluation is to determine the appropriateness of steroid doses in the emergency department to optimize patient outcomes and minimize adverse effects by influencing prescribing practice if necessary.

Methods: The electronic medical record will be used to identify patients who received high-dose methylprednisolone intravenously in the emergency department. This review will evaluate patients from September 2015 to September 2016. In addition to general patient information, the following data points will be collected for each patient: indication for steroid use, steroid dose ordered in the emergency department, steroid ordered and dose continued upon admission, and presence or absence of post-steroid use hyperglycemia. Steroid utilization will be assessed for appropriateness based on indication, available guidelines, and recommendations for steroid use in the diagnosed medical condition. Cost comparisons between steroid dose and route of administration will also be evaluated. After determining the common prescribing practices for high-dose intravenous methylprednisolone in the emergency department, assessment regarding the appropriateness of these trends will be concluded. Education on recommended steroid use and dosing can be provided if necessary.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Descriptive Report

Session-Board Number: 12-190

Poster Title: Implementation and results of an ED pharmacist-led antimicrobial stewardship program in a community hospital

Primary Author: Carly McKenzie, University Hospitals St. John Medical Center, OH; **Email:** carly.mckenzie@uhhospitals.org

Additional Author (s):
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John Remchick

Purpose: The importance of antimicrobial stewardship programs (ASPs) has been emphasized by The Joint Commission (TJC), who issued a 2016 standard requiring hospitals to have an ASP including a pharmacist. According to Bartlett et al. (AJHP 2014), antimicrobial cost per discharge decreased by $23.38 and cost per inpatient-day decreased by $4.27 with a pharmacist-led ASP. At University Hospitals St. John Medical Center (UHSJMC), an ED pharmacist makes empiric and outpatient antibiotic therapy recommendations by reviewing culture and sensitivity reports. This retrospective review is to determine the number, type and cost savings of interventions made by the UHSJMC ED pharmacist.

Methods: Patients seen in the ED between the dates of 7/6/2016 through 9/21/2016 were identified using our electronic medical record system (EMRS). The ED pharmacist performs a chart review of each patient, assesses the need for antimicrobials and makes an appropriate recommendation for empiric therapy. Similarly, the ED pharmacist performs a chart review of discharged patients based on daily culture and sensitivity reports. The ED pharmacist reviews and documents pertinent diagnoses, previous antibiotics and antibiotics prescribed at discharge. The pharmacist then determines the appropriateness of drug therapy and intervenes when necessary to adjust antibiotic therapy for outpatients. A retrospective review of this process was performed to determine the number, type and cost savings of interventions made by the ED pharmacist.

Results: From July 7, 2016 - September 21, 2016, we identified 257 interventions made by the ED pharmacist. Of the 257 interventions, a total of 161 antibiotic therapies were recommended. The pharmacist reviewed 174 culture and sensitivity (C&S) reports for patients recently discharged and 32 antimicrobial recommendations were made based on the C&S results. Additionally, the pharmacist reviewed 129 patient profiles, including past culture and sensitivities, current symptoms, allergies and medications, and was able to provide recommendations for empiric antibiotic therapy in the ED.

Conclusion: Traditionally, pharmacists institute changes in antibiotic therapy for patients admitted to the hospital through narrowing of broad-spectrum therapy or IV to PO conversions. Having a pharmacist in the ED allows early intervention, cost savings, and decreased workload for future practitioners. Over a two-month period, the UHSJMC ED pharmacist made 257 interventions with a total of 161 antimicrobial recommendations. Our study fulfills TJC standards and supports previous studies showing that pharmacist-led ASPs improve patient safety, decrease risk of antibiotic resistance, and provide cost savings for the hospital.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Case Report

Session-Board Number: 12-191

Poster Title: Topical econazole interaction with warfarin in elderly patient results in supratherapeutic INR

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Additional Author (s):
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Purpose: Here we report a case of supratherapeutic INR ≥ 8.0 with no active bleeding associated with econazole 1% topical cream application in a patient previously stable on warfarin therapy. The patient was an 88-year-old Caucasian male with a history of deep vein thrombosis/pulmonary embolism maintained on chronic warfarin therapy. He presented to our pharmacist-based outpatient Anticoagulation Monitoring Service for follow-up with a point-of-care INR exceeding the upper limit of detection. Notably, the patient had been stable at a target INR of 2.0 – 3.0 for the past three months. When asked about any recent changes in medication, the patient discussed initiating econazole 1% topical cream, an imidazole antifungal typically used to treat seborrheic keratosis, applied once daily. Per physician instructions the patient stated he was applying the econazole 1% cream over large portions of the chest, neck, and back. He denied changes to other medications, diet, or consumption of alcohol, cranberry, pomegranate, or grapefruit. The patient's subjective report did not indicate any alternative cause for elevated INR. Econazole was discontinued, warfarin was held, and oral phytonadione 2.5 mg was ordered for same-day administration. At follow-up one day later, the INR fell to 3.2 and the patient was advised to restart warfarin. Three days later the patient presented with a supratherapeutic INR of 5.0 with no active bleeding, which was attributed to cranberry juice ingestion. INR returned to therapeutic levels eight days after econazole was discontinued. A retrospective analysis using the Drug Interaction Probability Scale (DIPS) tool to assess the relationship between econazole and warfarin adverse effect (elevated INR) indicated there was a probable association for causality. Although a handful of previous case reports have documented a similar interaction between topical imidazoles and warfarin, more data is necessary to determine the safety of combining these agents and appropriate dosing to minimize warfarin toxicity. Pharmacists and other healthcare providers involved in

Anticoagulation Monitoring Services must cautiously assess patients receiving these medications concurrently, as this unlikely yet dangerous interaction may be easily overlooked.

Methods:

Results:

Conclusion:

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-192

Poster Title: Comparison of Narrow versus Broad Spectrum Antibiotics in Elderly Patients with Acute Exacerbations of Chronic Obstructive Pulmonary Disease

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Purpose: Acute exacerbations of chronic obstructive pulmonary disease (AECOPD) are associated with significantly increased morbidity, mortality, and health-care cost. To date, no study has specifically targeted broad versus narrow spectrum antibiotics in elderly patients hospitalized with AECOPD. However, the prevalence of chronic obstructive pulmonary disease (COPD) is 3 times higher in patients 65 years and older than those 40 to 64 years old. The purpose of this study is to compare outcomes of elderly patients receiving broad versus narrow spectrum antibiotics during a hospitalization for AECOPD.

Methods: A retrospective observational study will be performed using electronic medical records of patients >65 years old admitted with a primary diagnosis of AECOPD or a primary diagnosis of acute respiratory failure and a secondary diagnosis of AECOPD. The planned primary outcome of the study is a composite of mechanical ventilation within 48 hours of admission, transfer to intensive care status after 48 hours of admission, readmission within 30 days for COPD exacerbation, oxygen saturation less than 90% on room air and increased oxygen requirements from baseline after 48 hours. Secondary outcomes include individual components of the primary outcome, hospital length of stay, 10-day and 90-day readmission for AECOPD, all-cause 30-day and 90-day readmission, and clinical decompensation after 48 hours based on systolic blood pressure, respiratory rate, heart rate, oxygen saturation, and increased supplementary oxygen needs. Safety outcomes to be analyzed include Clostridium difficile associated diarrhea and reported adverse reaction to study medications. Data to be collected and analyzed will include patients baseline demographics, risk factors for multidrug resistant bacteria, home medications, concomitant hospital treatments, and antibiotics used.

Results: Results are pending data collection and will be presented at the Ohio Pharmacy Residency Conference.

Conclusion: Conclusions are pending data collection and will be presented at the Ohio Pharmacy Residency Conference.

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-193

Poster Title: Comparison of standard vs extended durations of antimicrobial therapy for hospital-acquired pneumonia

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Purpose: Hospital-acquired pneumonia is one of the most common nosocomial infections, accounting for up to 13% of healthcare-associated infections. The Infectious Diseases Society of America recommends a 7 day duration of antimicrobial therapy for hospital-acquired pneumonia; however, this recommendation is based on low quality evidence. The majority of evidence supporting this recommendation is from ventilator-associated pneumonia clinical trials. The objective of this study is to determine the difference in clinical cure rate for patients with hospital-acquired pneumonia treated with less than or equal to 8 days versus those treated with greater than 8 days of antimicrobial therapy.

Methods: This retrospective cohort study has been approved by the University of Toledo Medical Center Institutional Review Board and data is currently being collected. Patients will be included if they are 18 years or older, have a diagnosis of hospital-acquired pneumonia with 1 sign or symptom of pneumonia and received at least 72 hours of antimicrobial therapy. Patients will be excluded if they have community acquired pneumonia on admission, are pregnant, have cystic fibrosis, are immunocompromised, or received effective antimicrobial therapy for greater than 24 hours during the 72 hours prior to diagnosis of hospital-acquired pneumonia. Data describing baseline characteristics, antimicrobial therapy, and clinical cure and failure will be collected. The primary outcome will be the clinical cure rate at day 28 in patients treated with less than or equal to 8 days (standard duration) versus patients treated with greater than 8 days of antimicrobial therapy (extended duration). Secondary outcomes will include 30-day hospital readmission rates, mortality rates, hospital length of stay and rate of Clostridium difficile infection in patients treated with standard versus extended duration of antimicrobial therapy.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-194

Poster Title: Identifying perceptions of adherence in Human Immunodeficiency Virus (HIV)-positive through individual elicitation interviews.

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Purpose: Near-perfect adherence with antiretroviral therapy is associated with virological suppression and immunological recovery in patients with Human Immunodeficiency Virus (HIV). However, a meta-analysis estimated that only 55% of the HIV population in North America achieve optimal adherence rates. Therefore, the objective of this study is to identify themes and predictors of adherence by evaluating perceptions of HIV-positive patients. The themes and predictors identified will be used to develop a brief survey that can prospectively predict adherence in treatment-naïve HIV-infected individuals.

Methods: The study will be submitted to the health-system's Institutional Review Board for approval. HIV-positive patients, 18 years and older receiving care at the HIV outpatient clinic will be identified by a third party through review of the electronic medical record system and clinic-based software. Patients will be selected based on "expected" adherence (based on previously identified risk factors for adherence) and actual adherence (based on current viral loads) with four groups being identified – expected/adherent, expected/non-adherent, not expected/adherent, and not expected/non-adherent. Five to ten subjects will be selected for each group. Data collected will include the following: age, gender, race, education, income, and most recent viral load. Individuals meeting inclusion into the study will be invited to participate in an individual elicitation interview conducted by a trained interviewer. Following consent, the sessions will follow a structured interview format using predetermined questions related to the Health Belief Model and patient perceptions of disease state, social support, and medication management. Subjects' responses will be noted, audio recorded, and subsequently transcribed. The data derived from these sessions will be de-identified and remain confidential. Themes will then be extracted and summarized from the transcribed recordings. Responses will be

compared between adherent and non-adherent participants. From this, factors that influence the likelihood to be adherent to antiretroviral therapy will be determined.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-195

Poster Title: Analysis of potentially inappropriate medication (PIM) use in the older adult population at an academic medical center

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Purpose: Research suggests that the use of potentially inappropriate medications (PIMs) is associated with severe harm and high economic costs in the elderly. The aim of the Beers Criteria, updated in 2015 by the American Geriatrics Society, is to reduce inappropriate medication use in the elderly. The purposes of this study are to 1) determine the prevalence of and types of PIMs used in the older adult population at an academic medical center from January 1, 2016 through June 30, 2016, and 2) assess the prevalence of and categorize the adverse events due to PIMs.

Methods: The health-system's Institutional Review Board approved this study. The electronic medical system will identify patients 65 years of age and older admitted to the non-intensive care unit inpatient setting. The two new categories added to the 2015 Beers criteria will be used to identify PIMs, that include: potentially clinically important non-anti-infective drug-drug interactions that should be avoided in the elderly and non-anti-infective medications that require dose adjustments in elderly patients with varying degrees of kidney impairment. Baseline characteristics such as gender, age, weight, height, hospital admission date, reason for admission, new medications initiated during the admission, serum creatinine, creatinine clearance, length of stay, home medication list and hospital medication list during admission will be collected. Adverse events will be defined as medication side effects that may be associated with patient's hospital admission or an adverse event during hospitalization. Any documentation in the medical record of an adverse event to a medication will also be considered in this definition. Medical records of patients who are identified to have a drug interaction will be evaluated using the Drug Interaction Probability Scale (DIPS) and the Naranjo scale as applicable and will be used for evaluating the probability of adverse drug reaction. The

Wilcoxon rank-sum test and the independent student's t-test will be used for statistical analysis. Results will be considered statistically significant when alpha < 0.05.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-196

Poster Title: Implementation of Matrix-Assisted Laser Desorption/Ionization Time-of-Flight (MALDI-TOF) and Antimicrobial Stewardship Intervention at an Academic Medical Center

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Purpose: Blood stream infections (BSIs) are associated with increased morbidity and mortality in hospitalized patients. Prompt organism identification is vital for optimizing antimicrobial therapy in patients with BSI and decreasing antimicrobial resistance. To help improve treatment of BSIs, several rapid diagnostic tests (RDT), such as the Matrix-Assisted Laser Desorption/Ionization Time-of-Flight, have been developed. Studies have shown that RDTs along with antimicrobial stewardship improve time to effective therapy and have a positive impact on patient outcomes, including mortality. The objective of this study is to assess the impact of this combined approach on the management of BSIs at our institution.

Methods: Single-center, pre-post quasi-experimental study awaiting IRB approval including all patients treated for documented BSI at our institution between January 1, 2015 and December 31, 2016. Patients will be excluded if they were transferred from an outside hospital with a documented BSI or had blood cultures that grew Mycobacterium species, Nocardia species, anaerobic organisms, or filamentous fungi. Outcomes will be compared between pre- and post-MALDI-TOF implementation groups. Primary endpoint of time to effective antimicrobial therapy is defined as time from blood culture draw to administration of the first antimicrobial with known susceptibility per microbiology report. Secondary endpoints: time to optimal antimicrobial therapy, 30-day readmission and all-cause mortality, hospital and intensive care unit (ICU) length of stay following blood culture positivity, and recurrent bacteremia within 30 days of discontinuation of antimicrobial therapy. All statistical analyses will be performed using SPSS software.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-197

Poster Title: Assessment of Glycemic Control in Diabetic Patients While Unable to Eat

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Purpose: Hypoglycemia in the general medicine ward is associated with increased in-hospital mortality, length of stay, and 1-year mortality. Previous evidence demonstrated half of identified hypoglycemic events were associated with decreased caloric intake without a medication change. The 2016 American Diabetes Association treatment guidelines recommend a basal plus correction regimen for diabetic patients that are unable to eat (NPO) in the noncritical care setting. In the perioperative period, the guidelines recommend full doses of long-acting insulin and half doses of morning insulin NPH. Other treatment guidelines do not provide specific recommendations for the inpatient management of patients with reduced caloric intake.

Methods: This is an Institutional Review Board-approved retrospective cohort study. Adult patients admitted to a noncritical care setting with type II diabetes, prescribed outpatient basal insulin, received at least one basal insulin injection while inpatient, and were NPO during their admission will be included. Patients will be excluded if they have diabetic ketoacidosis, hyperosmolar hyperglycemic state, hypoglycemia on admission, received corticosteroid therapy, received total parenteral nutrition, cardiovascular surgery, type I diabetes, or are pregnant. Data describing baseline characteristics, diabetic therapy and blood glucose control will be collected. The primary outcome is the difference in hypoglycemic events, defined as a blood glucose less than 70 milligrams per deciliter, between patients with a greater than or equal to fifty percent or less than fifty percent reduction in home basal insulin dose while NPO. Secondary outcomes include comparing glycemic control, defined as a blood glucose between 70 and 180 milligrams per deciliter, severe hypoglycemic events, hyperglycemic events, administration of glucose or dextrose, hospital length of stay, hospital complications and inpatient total daily dose of insulin between both groups.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-198

Poster Title: Identification and management of sepsis: who does it better?

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Purpose: In October 2015, the Centers for Medicare and Medicaid Services (CMS) implemented a national core measure addressing the management of patients with sepsis and septic shock. In response to this, the University of Toledo Medical Center (UTMC) created a task force charged with ensuring compliance with this measure including a sepsis order set, and collaboration with rapid response teams. Despite this, the implementation of them may vary depending on the location. The objective of this study is to compare adherence to the core measure between patients who present with sepsis in the emergency department (ED) versus those who are already hospitalized.

Methods: This retrospective cohort study was submitted to the Institutional Review Board at the UTMC for approval. Patients 18 years and older admitted with sepsis, severe sepsis, and septic shock between January 1, 2016 and June 30, 2016 will be included. Patients will be excluded for age less than 18 years, pregnant, patient admitted with other types of shock including cardiogenic shock, hemorrhagic shock, and anaphylactoid reaction, and patients admitted / transferred from outside hospital. Patients' medical records will be evaluated to retrieve the 3 hours and 6 hours bundle components. The 3 hours bundle includes measuring lactate level, obtaining blood cultures prior to antibiotics, administering broad spectrum antibiotics, administering 30 mL/kg crystalloid. The 6 hours bundle includes applying vasopressors for hypotension not responding to initial fluid resuscitation, repeating a focused exam, assessing volume status, and re-measuring lactate. The primary outcome will be the incidence of adherence to CMS core measure. Secondary outcomes will include risk factors for non-adherence to CMS core measure components and the level of practitioners' baseline knowledge "will be assessed by administering a survey for UTMC employees", the length of

hospital and ICU stay, 30-day hospital mortality rate, and the average time of first antibiotic dose. Appropriate statistical analyses will be used to define primary and secondary objectives.

Results: NA

Conclusion: NA

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-199

Poster Title: Association between tacrolimus levels and graft loss in renal transplant patients

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Purpose: Success associated with kidney transplants is attributable to calcineurin inhibitors (CNIs), specifically tacrolimus, and their ability to reduce acute rejection rates and improve overall graft survival. Trough levels are closely monitored as to remain in the recommended reference range to minimize adverse effects. Specific CNIs trough values that minimize patients risk of acute or chronic rejection, have not been specifically identified. Therefore, the objective of this study is to evaluate the effect of tacrolimus trough concentrations following kidney transplant on long term graft loss.

Methods: This retrospective cohort study was submitted to the Institutional Review Board at the University of Toledo. Patients 18 years and older who underwent a renal transplant between Oct 1, 2006 to July 31, 2016, received alemtuzumab induction therapy, and tacrolimus and mycophenolate maintenance therapy at University of Toledo Medical Center are eligible for inclusion. Patients will be excluded if they were treated with agents other than tacrolimus, mycophenolate and prednisone for long term immunosuppression, those pregnant or breast-feeding, documented allergy to any agent in the post-transplant protocol, patients without at least 50% available outpatient labs and those without a one year tacrolimus level. Tacrolimus concentrations at 12 months will then be stratified into quartiles and compared . Kaplan-Meier curves will be used to analyze the probability of graft loss over time. The primary endpoint is to compare the incidence of death-censored graft failure based on tacrolimus trough concentrations. Secondary endpoints include the incidence of acute rejection episodes, and adverse outcomes including new onset of diabetes mellitus, hyperlipidemia, and opportunistic and surgical site infections over the first twelve months post-operatively. A planned sub-group analysis of deceased versus live donor transplant will be done on all outcomes.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-200

Poster Title: Implementation of an antimicrobial restriction policy: is the “paper” more persuasive?

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Purpose: Antibiotic stewardship (AS) is defined as “coordinated interventions designed to improve and measure the appropriate use of antibiotic agents". Among the many types of interventions that can be implemented in order to help accomplish this goal, the Infectious Diseases Society of America (IDSA) has recommended the use of pre-authorization and prospective audit and feedback (PAF) as core interventions to improve antibiotic prescribing practices. The objective of this study is to examine the impact of implementation of a pre-authorization method in the form of a restrictive antimicrobial policy on prescribing patterns at an academic medical center compared to PAF alone.

Methods: Single-center, pre-post quasi-experimental study awaiting IRB approval including all patients admitted to the University of Toledo Medical Center between January 1, 2015 and December 31, 2016 who received at least one dose of either linezolid, meropenem, or micafungin. Patients who were readmitted in the study period and received additional doses of study drug will have their subsequent admissions excluded. Outcomes will be compared between the pre- and post-implementation groups. The primary endpoint is rate of meeting hospital-approved criteria for use; this will be assessed at 24 hours, 48 hours and greater than or equal to 72 hours based on currently approved hospital policy standards. Secondary endpoints include the rate of meeting clinical criteria for use, incidence of C. difficile, hospital length of stay, total days of antibiotic therapy, and antimicrobial cost (adjusted for cost differences over the study period). Additional outcomes, to ensure the policy has not led to additional patient harm, include in-hospital and 30-day all-cause mortality.

Results: N/A.

Conclusion: N/A.

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-201

Poster Title: Assessing the impact of pharmacist discharge medication reconciliation and heart failure education in reducing 30-day readmission rates

Primary Author: Masseeh Rahman, Asante Rogue Regional Medical Center, OR; **Email:** masseeh.rahman@asante.org

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Purpose: Heart failure patients who are non-compliant to their medications and/or do not have the proper resources available are at a higher risk of being readmitted to the hospital, carrying a very high cost-burden. The purpose of the study is to evaluate the impact of utilizing the heart failure core measure guidelines in combination with pharmacist-driven discharge medication reconciliation and patient bedside medication counseling and education to reduce 30-day hospital readmission rates in the heart failure population. Our goal is to further identify areas where pharmacists can intervene and help the hospital avoid financial penalties related to 30-day readmissions.

Methods: This study has been submitted to the Institutional Review Board for approval. The electronic medical record system (EPIC) will identify patients who are admitted to the heart center at our institution with a primary diagnosis of acute on chronic heart failure exacerbation, with an ejection fraction of less than or equal to 40 percent. The unit base pharmacist will evaluate the patient medication list, and will provide heart failure and discharge medication to the patients, with a focus on medication adherence. These recommendations will be centered on the 2016 ACC/AHA/HFSA Focused Update on New Pharmacological Therapy for Heart Failure guidelines. This pharmacist intervention period will span 3 months (December 1, 2016 – February 28, 2017), and data from this span will be reviewed to rate compliance of treatment and interventions with respect to heart failure guidelines. All data will be recorded without patient identifiers and maintained confidentially. The results will be linked to readmission rates during this span, and will be compared to readmission rates during a similar time period last year, helping to assess the impact of pharmacist intervention in reducing readmission rates at our institution.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-202

Poster Title: Benefits of rapid microbiologic tests and automated pharmacy alerts to optimize pharmacy-driven antibiotic stewardship

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Purpose: The goal of antibiotic stewardship is to optimize clinical outcomes related to antibiotic use, decrease healthcare costs associated with infections, and minimize antibiotic resistance. New technology to expedite bacterial identification and antibiotic susceptibility testing plays an important role in optimizing antibiotic therapy. This study was designed to evaluate the clinical impact of implementing rapid microbiological tests and automated pharmacy alerts on pharmacy-driven antibiotic stewardship in the Intensive Care Unit (ICU).

Methods: A retrospective, observational study will be performed at Asante Health System, Oregon. Inclusion criteria will be patients in the Intensive Care Unit receiving antibiotic therapy involving pharmacy recommendations and positive rapid microbiological tests, specifically matrix-assisted laser desorption/ionization time-of-flight mass spectrometer (MALDI-TOF) and VITEK 2 for rapid microbial identification and susceptibility, and rapid polymerase chain reaction (PCR) tests for methicillin-resistant Staphylococcus aureus (MRSA) detection. Exclusion criteria include patients without documented pharmacy intervention and positive rapid microbiological tests suggesting contamination or colonization rather than true infection. Primary outcome measures will be inpatient days of antibiotic therapy and time between laboratory receipts of collected specimens and initial pharmacy antibiotic recommendations. Secondary outcome measures will be time from specimen receipt to initiation of empiric antibiotics, time from specimen receipt to initiation of pathogen-directed antibiotics, and time from pharmacist recommendation to change from empiric to pathogen-directed therapy. Blood samples will be analyzed using MRSA PCR, MALDI-TOF, and VITEK 2, while respiratory cultures

will be analyzed using the latter two microbiological tests. Data collection will span over three time intervals for comparison: pre-rapid microbiological tests (January to March 2015); post-rapid tests/pre-pharmacy alerts (January to March 2016); and post-rapid tests/post-pharmacy alerts (January to March 2017). Clinical guidelines on interpreting rapid microbiological tests will be developed to assist prescribers in antibiotic selection. This study was approved by the Southern Oregon Institutional Review Board.

Results: To be determined

Conclusion: To be determined

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-203

Poster Title: Evaluating the effect of recent intravenous drug abuse on vancomycin dosing

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Purpose: The potential effect of recent intravenous drug abuse (IVDA) on vancomycin dosing regimen is unclear. The primary objective of this study is to determine the average maintenance dose of vancomycin required for individuals with recent history of IVDA to achieve therapeutic trough range of 15 to 20 mg/L compared to the required mean dose for patients without recent history of IVDA. Secondary outcomes will be the mean initial trough at steady state and the mean time between initial pharmacy vancomycin dosing per protocol and first reported therapeutic trough at steady state.

Methods: This study has been approved by the Institutional Review Board. The electronic medical record system will be used to identify patients who have received intravenous vancomycin and have had positive drug tests for methamphetamine, opiate or cocaine. Additional chart review will be done to confirm a history of IVDA. Patients who are under the age of 18, over the age of 65, has body mass index (BMI) greater than 30 kg/meter squared, and those with creatinine clearance less than 60 ml/min will be excluded. A registry will be created to track and collect information on patients who meet these criteria between January 1, 2013 and January 1, 2017. The results will be compared to a patient population with similar demographics, but without a recent history of IVDA. Statistical t-tests will be applied to analyze the outcomes. It is estimated a sample size of 22 will provide the study with 80 percent power, assuming there is a 20 percent difference in vancomycin dosing between the control and study groups. Three separate subgroup analysis will be done for patients with positive drug tests for methamphetamine, opiate, and cocaine to stratify the data.

Results: To be determined

Conclusion: To be determined

Submission Category: Pain Management

Submission Type: Research-in-Progress

Session-Board Number: 12-205

Poster Title: Development and implementation of managed care pharmacist-led opioid tapering initiative in a rural healthcare coordinated care organization

Primary Author: Cassandra Miller, CareOregon, OR; **Email:** millerc@careoregon.org

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Purpose: There has been a dramatic increase in drug overdose and hospitalization due to prescription opioids in the United States. The CDC guidelines for chronic pain recommend keeping patients' opioid dose as low as possible since the relative risk of death significantly increases when opioid dose exceeds 50 mg per day morphine equivalent dose. Lack of prescriber knowledge remains a significant barrier impeding successful implementation of a population based opioid reduction plan. This study aims to improve primary care provider opioid prescribing and reduce opioid use across the covered population. We will achieve this aim through a focused provider education intervention.

Methods: Needs assessments will be conducted at Columbia Pacific CCO (CPCCO) network clinics. Providers at participating CPCCO network clinics managing at risk members will complete the pre-survey instrument to assess their current knowledge level of opioid management topics, identify barriers to safe opioid management, and rank the opioid management topics in order of importance. Managed care pharmacists will assist providers by providing each clinic with tailored opioid management education series in the form of in-person seminars, webinars, workshops, and reference guides. Providers at participating clinics will complete the post survey to assess change in knowledge after education intervention. The pre and post intervention survey of provider knowledge self-assessment will be analyzed for each participating clinic. The number of at risk members at each CPCCO network clinic pre-intervention will be compared with number of at risk members post intervention. At risk members are defined as 18 years of age and greater, filled opioids for 90 consecutive days or longer, and MED over 50 mg averaged over 90 days.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 12-207

Poster Title: Using medication burden to stratify patient complexity and coordinate pharmacist involvement in team-based care

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Purpose: Effective enrollment, engagement, and risk stratification is imperative for any population health management strategy taking place within a patient centered medical home (PCMH).1 In a PCMH clinic population consisting mainly of empaneled managed Medicaid members, we are seeking a new way to efficiently identify patients who may benefit from active disease-state management intervention(s), and to prioritize them to maximize program impact with existing resources. This exploratory data analysis aims to discover data elements that alone or in combination have an association with high utilization and are able to capture patients with multiple chronic conditions.

Methods: This retrospective, exploratory, data mining analysis will examine existing claims data to track one year of service utilization and outcomes from 8/10/2015 through 8/9/2016. Pre-specified decision trees will be used to categorize variables of importance and examine the association to the primary outcome, all-cause health care utilization costs. Secondary endpoints will attempt to determine the accuracy of the variables to reliably capture patients with uncontrolled diabetes, hypertension or dyslipidemia, and identified as having multiple chronic conditions. First we will compute raw associations of the variables by placing the results of the data pipeline in contingency tables, followed by adjustments that involves matching for baseline controls. At each step the data pipeline likelihood ratios will be calculated as well as confidence intervals using logistical regression and use a significance cutoff of p-value of less than 0.05. Our hypothesis is that patients identified as taking five or more medications (defined as 2 or more Generic Product Identifier character 12 prescription fills within the study period) will be a highly associated to the purposed outcome variables. This project was approved by Western IRB on 9/23/2016.

Results: In progress

Conclusion: In progress

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-208

Poster Title: Contraceptive opportunities in females of childbearing age in a primary care clinic providing family planning services for a low-income or underinsured population

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Zach Rosko

Purpose: In Oregon about 50 percent of pregnancies are unintended; of these 52 percent did not use any contraceptive methods. As such, the Oregon Health Authority developed an incentive-driven quality measure for provision of Effective Contraceptive Use in females of childbearing age. Initial steps in providing contraceptive services to females of childbearing age is screening for pregnancy intentions. The One Key Question is a screening tool for primary care to improve documentation of counseling for contraception. The purpose of this project is to increase documentation of contraceptive method or counseling in adult females of child bearing age in our FQHC clinics.

Methods: The Western Institutional Review Board has decided that this project is exempt. This is an observational, cohort, process improvement study utilizing a retrospective chart review in adult females' ages 18 through 50 years old. Females documented as pregnant during the year or incapable of becoming pregnant will be excluded. The One Key Question (OKQ) is a screening tool with the goal of providing appropriate preventative or prenatal planning. The retrospective chart review will identify rate of documentation of OKQ. Based on the results of the chart review, a process for documentation of the OKQ will be determined for implementation. The process will aim to create a workflow that identifies opportunities for contraceptive services and streamline the method for consistent provider documentation. A chart review of the post implementation period (approximately 4 months) will be performed. The baseline percentage of OKQ documentation will be compared to the post implementation percentage of documentation for visits with a primary care provider. Data collected will be de-identified to report results by primary care provider and age. The outcome of this project is to increase documentation of contraceptive methods or counseling for females patients of childbearing age utilizing the OKQ screening.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-209

Poster Title: Evaluation of treatment with dabigatran in patients previously prescribed warfarin with a time in therapeutic range less than 50%

Primary Author: Jenna West, Kaiser Permanente Health Plan of the Northwest, OR; **Email:** jenna.west02@gmail.com

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Purpose: Patients on warfarin with a time in therapeutic range (TTR) of less than 50% are at risk of poor outcomes and require frequent monitoring. Dabigatran has been shown to be non-inferior to warfarin for the prevention of venous thromboembolism (VTE) in patients with non-valvular atrial fibrillation (NVAF). The purpose of this program is to develop criteria to transition select patients with TTR less than 50% from warfarin to dabigatran. The primary outcome is adherence and tolerance to dabigatran.

Methods: Patients on warfarin for the prevention of VTE with NVAF and a TTR of less than 50% will be eligible for this study. Patients will be assessed for treatment with dabigatran based on inclusion and exclusion criteria. Pharmacists will transition eligible patients from warfarin to dabigatran using an anticoagulation collaborative drug therapy agreement. The dabigatran group will be compared to a group of patients managed on warfarin with a TTR less than 50%. The primary outcome will be adherence and side effect monitoring at one month for patients on dabigatran. The secondary outcome will be safety monitoring for major bleeding or clotting events. This study is exempt from review by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-210

Poster Title: Effect of a clinical pharmacy intervention plus mailing or mailing alone compared to usual care on zolpidem deprescribing among older adults

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Purpose: The American Geriatric Society recommends against prescribing sedative hypnotic medications, including zolpidem, in patients 65 years and older. Although these drugs may pose more risk than benefit to older patients, they may be prescribed without a clear plan for discontinuation. The aim of this study is to compare the rate of zolpidem discontinuation from a pharmacist intervention plus mailing or mailing alone to usual care.

Methods: To qualify for enrollment, health care plan members 64 years and older received a total of at least two, but no more than three, zolpidem dispenses in the past year. Exclusion criteria include: less than six months of health plan enrollment; a dispense quantity of six tablets or less per prescription; palliative care or hospice enrollment; long-term care or skilled nursing facility residence; active cancer care; and co-prescribing of an antipsychotic medication, a cholinesterase inhibitor, or memantine. A total of 150 patients will be randomized (1:1:1) to three arms: 1) those receiving a signed letter from the prescriber and an educational brochure; 2) those receiving a signed letter from the prescriber, an educational brochure, and follow-up telephone contact with a pharmacist; or 3) usual care (control). With 50 patients in each intervention arm, we will have 80% power to detect a similar difference in the discontinuation rates between each intervention group and the usual care group. The primary endpoint is the rate of discontinuation of zolpidem at six months in each arm. The secondary objective is to qualitatively assess the barriers and facilitators to implementation and success of the interventions. This study is exempt from review by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-211

Poster Title: Effectiveness of a pharmacy diabetes management clinic implementing a provider – pharmacist warm hand-off referral process to recruit patients and demonstrate improved clinical outcomes

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Michal Mingura

Purpose: There are well documented therapeutic and safety outcomes-based data representative of the positive effect that pharmacists have in the treatment and prevention of chronic disease states, including diabetes mellitus. Collaborative diabetes clinics managed by pharmacists have demonstrated positive clinical outcomes compared to patients whose diabetes is managed solely by a Primary Care Provider (PCP). The purpose of this research is to evaluate the effectiveness of an interdisciplinary method of recruitment to enroll patients within a Federally Qualified Health Center (FQHC) into a Pharmacy Diabetes Management Clinic (PDMC), and assess the clinical outcomes of patients co-managed by a pharmacist and PCP.

Methods: The institutional review board approved this study. This is a prospective cohort and data analysis study. Diabetic patients who were enrolled into Yakima Valley Farmworkers Clinic – Salud Medical Center (SMC) PDMC using a provider – pharmacist warm hand off referral method of recruitment will be compared to patients managed solely by an SMC PCP. Uncontrolled type 2 diabetic patients with a hemoglobin A1C% ≥ 9 charted in their medical records within twelve months of recruitment will be included. A total target number of 80 patients will be consented and stratified according to HbA1C subgroup: (1) 9 – 9.9%; (2) 10 – 10.9%; (3) 11 – 11.9%; (4) ≥ 12%. Information collected using medical charts at baseline and at three and six months of receiving diabetes care will include; percentage change in HbA1C, range and average of self-monitoring blood glucose (SMBG) levels, frequency of HbA1C testing, and patient self-reported adherence to prescription medications. A modified intent-to-treat

analysis will be performed and the last observation carried over method will be used to account for missing values at the end of the study. The investigators will analyze the data to discover statistical trends and correlations between participant characteristics and study endpoints. The data will be reported in aggregate form.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-212

Poster Title: Evaluating utilization and policy variances of antivirals for hepatitis C in the Oregon Medicaid program

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Purpose: Each of Oregon's 16 Coordinated Care Organizations (CCOs) set qualifying factors for authorizing approval of different medications for those in the Medicaid program. The treatment for hepatitis C has drastically changed with the approval of all oral direct acting antiviral (DAA) regimens. One of the major barriers to widespread treatment with DAAs is the significant financial burden for the CCOs. Therefore, each CCO has implemented criteria to prioritize treatment to those with more advanced disease. The purpose of this analysis is to characterize how the variability of authorization criteria amongst the CCOs impacts utilization of DAAs.

Methods: This is a descriptive observational analysis. Consent will be requested from each CCO to include their DAA prior authorization (PA) criteria. The CCO name will not be tied to the criteria. To control for frequent PA changes, criteria from January 2015 and 2016 will be obtained. The preferred DAA(s) and individual components within the criteria will be included. At a minimum, the following components required for approval will be collected and compared: fibrosis stage, HIV co- infection, prescriber type, and drug and alcohol abuse or use. A utilization trend analysis will be performed using aggregate claims data. This will be quantified as prescriptions filled per enrolled member per month. Additionally, total denied and paid claims will be quantified for each CCO. Approval from the local Institutional Review Board is pending.

Results: n/a

Conclusion: n/a

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-213

Poster Title: Impact of diagnostic uncertainty: distinguishing acute decompensated heart failure and community acquired pneumonia

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Purpose: In heart failure (HF) patients, distinguishing between acute decompensated heart failure (ADHF) and community acquired pneumonia (CAP) is challenging due to similarities in presentation and imaging. Delays in accurate diagnosis may lead to adverse outcomes; however early initiation of simultaneous treatment for both ADHF and CAP may lead to excess medication use and increased risk for drug-associated adverse effects. Our objective is to describe the diagnostic work-up, management, and outcomes of HF patients presenting to the Veterans Affairs Portland Health Care System (VAPORHCS) with symptoms consistent with either ADHF or CAP.

Methods: A retrospective cohort study of HF inpatients and outpatients presenting with symptoms consistent with either ADHF or CAP; patients will be excluded if neither ADHF nor CAP are included in the differential diagnoses. Data will be collected on patient demographics, comorbidities, visit type, imaging, laboratory tests, medications, chief complaint, and primary diagnosis. The proportion of patients receiving diagnostic testing and/or pharmacologic treatment consistent with ADHF and CAP will be summarized. The frequency of 30-day readmission and emergency department visits will be compared between patients with diagnostic uncertainty (those treated for ADHF and CAP) versus those without (those treated only for ADHF or CAP). This project has been approved by the Institutional Review Board.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-214

Poster Title: Impact of a pharmacist-managed COPD service utilizing spirometry on patient-related outcomes

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Purpose: Appropriate management of COPD is necessary in order to reduce exacerbations and hospitalizations. Previous literature has demonstrated value in having pharmacists involved in COPD patient care. This study will seek to compare pharmacist-managed COPD patients at the Virginia Garcia Memorial Health Center (VGMHC) Beaverton clinic to patients receiving usual care at other VGMHC clinic locations. Usual care at VGMHC is defined as having a referral placed to pulmonology. Spirometry data will be utilized to categorize disease severity and to ensure therapy is consistent with guideline recommendations and our clinic standards of care.

Methods: In January 2014, the Virginia Garcia Memorial Health Center (VGMHC) Beaverton clinic began a pharmacist-managed spirometry clinic for management of asthma and COPD patients. This service is not available at the other VGMHC clinics; instead, asthma and COPD patients are managed at the discretion of their provider who can refer patients to pulmonologist as warranted. Our study will be a retrospective chart review of all patients at VGMHC clinics who had a diagnosis of COPD as of January 2013, excluding patients with asthma or congestive heart failure comorbidities. We will identify all COPD exacerbations (composite of ED visits, hospitalizations, physician visits, and corticosteroid prescriptions) that occurred from January 2013 to January 2014 (one year prior to implementation of the pharmacist-managed spirometry), as well as those that occurred from January 2014 to January 2015 (one year after implementation of the pharmacist-managed spirometry service). We will then utilize this data to compare the rate of COPD exacerbations for patients seen in the Beaverton clinic to the rate

of COPD exacerbations for patients at all other VGMHC clinic sites in order to demonstrate the impact of the clinical pharmacy spirometry service on COPD management.

Results: N/A

Conclusion: N/A

Submission Category: Ambulatory Care

Submission Type: Research-in-Progress

Session-Board Number: 12-215

Poster Title: Impact of pharmacist performed screening on the diagnosis of depression in diabetic patients

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Purpose: Studies have shown depression is associated with an increased risk of diabetes and inversely diabetes is associated with an increased risk of depression. The American Diabetes Association recommends screening for psychological stresses. Depression screening was implemented into clinical pharmacy workflow at Virginia Garcia Memorial Health Center in February 2016. Patients who screen positive on PHQ-9 (score greater than 10) are referred by clinical pharmacy to their provider for management of depression. The objective of this study is to determine the impact of incorporating depression screening with the PHQ-2/9 into the clinical pharmacy workflow on the identification of patients with depression.

Methods: This is a retrospective study of patients with diabetes at Virginia Garcia Memorial Health Center who were screened with the PHQ-2/9 to assess for depression. Patients will be divided into two cohorts based on time; pre-intervention period from January 31, 2015 to January 31, 2016 and post-intervention period from February 1, 2016 to January 31, 2017. The primary outcome will be to assess the composite of an increase or addition of antidepressant, new diagnosis of depression/anxiety, referral to behavioral health, mental health or to the psychiatric-mental health nurse practitioner. The study will be submitted to the Institutional Review Board at Pacific University for approval.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-216

Poster Title: Impact of targeted discharge counseling on heart failure patients with increased readmission risk: effect on readmission rates

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Additional Author (s):

Purpose: Since the implementation of the Value Based Purchasing and the Affordable Care Act, heart failure readmission rates have received increased scrutiny. Not only are hospital readmission rates utilized to calculate federal reimbursement dollars, this information is now publicly available on the Center for Medicare and Medicaid (CMS) website for hospital comparison. The objective of this study is to determine the impact of targeted, in-depth discharge counseling for heart failure patients on hospital-wide heart failure readmission rates.

Methods: This study will be submitted to the Institutional Review Board for approval. A report will be generated in the electronic health record to determine the readmission risk of a heart failure patient using: number of prior admissions, Charleston Comorbidity index score, income metrics, polypharmacy index, minority status, age status, presence of diabetes and/or chronic obstructive pulmonary disease (COPD), admission from the emergency department and presence of end-stage renal disease. The top 20% of heart failure patients with the highest risk for readmission as determined by the metric will be given discharge counseling by the pharmacy resident, in conjunction with the hospital's heart failure educator. Barriers to medication adherence will be identified and referred to social work as needed. All patient data will be recorded confidentially. Data will be collected for a three-month period, and a readmission rate for the top 20% of heart failure patients will be calculated. This data will be compared to data from the previous quarter, as well as the corresponding quarter from the previous

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 12-217

Poster Title: Pharmacist-driven glycemic management in post-operative patients

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Additional Author (s):

Purpose: Hyperglycemia in post-operative patients is detrimental to the healing process. The objective of this study is to determine if pharmacist management of insulin dosing can reduce the incidence of hyperglycemia in this patient population and lead to improved outcomes.

Methods: This study will be submitted to the Institutional Review Board for approval. The pharmacist located in the satellite on the surgery floor will be responsible for management of blood glucose levels in general surgery post-operative patients located on their floor. They will follow a basic protocol developed to utilize basal, prandial, and correction-scale insulin to maintain patients' blood glucose level between 100 and 180 mg/dL. The data collected during a three-month pilot period will include incidence of hypoglycemic events, incidence of blood glucose over 180 mg/dL, incidence of surgical site infections, and length of stay. This will be accomplished by monitoring the electronic health records of patients referred to this clinical service.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-218

Poster Title: Hypoglycemia rates among inpatients receiving insulin

Primary Author: Christopher Lin, Providence Health and Services at Providence Portland and Providence St. Vincent Medical Centers, OR; **Email:** christopher.lin@providence.org

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Purpose: Insulin is often utilized to meet recommended glycemic control standards during inpatient care. However, insulin has an increased risk for hypoglycemia and its associated symptoms and effects. Hypoglycemia is one of the most common adverse drug events among hospitalized patients, and is associated with increased morbidity, mortality, hospital length of stay, and cost. This study aims to monitor the prevalence of hypoglycemic events in patients receiving insulin therapy during admission to a large metropolitan medical center, and to identify, transform, and evaluate modifiable medical practices to reduce the incidence of hypoglycemic events.

Methods: Retrospective data collection and analysis will be employed to perform a single-hospital study on hypoglycemia rates. Patients admitted during the study period who received at least one dose of insulin prior to a hypoglycemic blood glucose reading (defined as less than or equal to 50 mg/dL) will be evaluated. Exclusions will include emergency department patients, day surgery patients, and patients experiencing a hypoglycemic episode prior to or without receiving insulin during their inpatient admission. Electronic reporting tools and manual chart review will be utilized to identify patients and the following data: patient age; gender; medications prior to admission; blood glucose and other pertinent laboratory values; medication administration information; intake and output information; admission length of stay; admission diagnosis; significant medical history; and nursing unit location. Data analysis will be performed to evaluate the clinical context, timing, type, and dose(s) of insulin given in relation to the hypoglycemic events; factors (medications, comorbidities, medical conditions) that may have increased hypoglycemia risk; and possible modifiable factors and related interventions that may decrease hypoglycemia rates. Interventions will be formulated based on

data analysis and implemented mid-study. Post-implementation data collection and analysis will be performed to re-evaluate hypoglycemia rates and intervention efficacy. Patient identifiers will not be retained. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 12-219

Poster Title: Development of a pharmacist-driven oral oncology neutropenia management protocol for a system-wide specialty pharmacy

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Additional Author (s):
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Purpose: Specialty pharmacy is a growing area that focuses on high-touch, high-cost medications indicated for complex disease states. Oral oncology agents represent a significant proportion of these therapies. These agents are attractive to both prescribers and patients due to ease of administration; however, unprecedented barriers exist to their acquisition compared to their traditional intravenous counterparts. Cost of therapy remains high which contributes to patient nonadherence, along with other factors such as adverse effects. Neutropenia is a serious adverse effect of several oral oncology agents and if inappropriately managed, can lead to increased patient harm, decreased outcomes, and increased healthcare costs.

Methods: This study will be submitted to the Institutional Review Board for approval. A neutropenia management protocol will be developed that will allow specialty pharmacists of a large health-system to collaborate with prescribers in the clinical management of patients receiving certain oral oncology agents. This protocol will entail the pharmacists to proactively review patients charts and collaborate with prescribers to decrease the incidence of neutropenia in this patient population. Determining which oral oncology agents to include in the protocol will be based on the agent's risk of neutropenia (considering both published data and historical data) and based on dispense volume and propriety to dispense. A retrospective observational cohort study will be conducted that will include a control group (patients who received a qualifying oral oncology agent prior to protocol development) and an intervention group (patients who received agent after protocol development). The protocol is currently in development and will entail pharmacists checking labs for neutropenia and markers of infection and contacting prescribers when these outlined criteria are met to assist in guiding therapy. All

data will be obtained without patient identifiers and confidentiality will be maintained. The primary endpoint will be a reduction in the rate of neutropenia. Secondary endpoints will include a reduction of rate of healthcare consumption (number of hospitalizations, emergency department visits, prescriber office visits), reduction of infection rates, and increased adherence rates.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-220

Poster Title: Evaluation and impact of antibiotic use on Clostridium difficile rates

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Purpose: Antibiotic use is a well-established risk factor for Clostridium difficile-associated diarrhea (CDAD). However, ambiguity exists regarding antibiotics associated with highest risks of new-onset and recurrent CDAD. Implementation of strategies to reduce use of high risk antibiotics is an essential step in prevention of CDAD. It has been estimated that 30 percent reduction in antibiotic utilization will result in 26 percent decrease in Clostridium difficile rates. The objective of this study is to evaluate baseline medication use data to identify opportunities to improve medication use and clinical practice for reduction of Clostridium difficile rates.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will commence with evaluation of Clostridium difficile rates within the medical centers. Upon assessment of hospital-wide Clostridium difficile rates, a retrospective analysis of patients diagnosed with CDAD will be conducted. This analysis will elucidate antibiotic utilization in patients with CDAD and risk factors contributing to the development of CDAD. Collection of pertinent patient data will include white blood cell count, percentage of bands, presence or absence of fever, watery diarrhea (3 or more loose stools in 24 hours), positive stool test for Clostridium difficile or toxins, time to positive stool test, pseudomembranous colitis on histopathology or colonoscopy, time from admission to onset of symptoms or risk factors for CDAD, previous and current antibiotics use (indication, route, duration, appropriateness), length of stay, hospital floor admission, and comorbidities. By means of this data, areas for improvement in clinical management of CDAD and interventions to reduce rates of Clostridium difficile will be discovered and reported.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-221

Poster Title: Impact of oritavancin on prevention of hospitalization through an infectious disease physician-led cellulitis treatment pathway

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Additional Author (s):
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Purpose: The Center for Disease Control estimates that each year there are over three million emergency department visits for cellulitis and abscess in the United States. The majority of patients receive outpatient treatment. However, nearly ten percent of all hospital admissions are for acute bacterial skin and skin structure infections (ABSSSI), creating a costly economic burden. The objective of this study is to compare rates of hospitalization and cost-saving implications in patients with ABSSSI's that were treated with oritavancin vs standard therapy.

Methods: This study will be submitted to the Institutional Review Board for approval. A quasi-experimental study will be conducted at a 523 bed tertiary, teaching hospital. A protocol for oritavancin use in the emergency department or clinical decision unit will be implemented within an infectious disease physician-led cellulitis treatment pathway. The electronic health record system will be used to identify patients who were treated with standard therapy prior to implementation of the oritavancin protocol, but would have met criteria for oritavancin. At the conclusion of this study, data will be used to calculate rates of 30-day readmission or emergency department visits for patients treated with oritavancin vs patients treated with standard therapy. Average cost per patient in the group treated with oritavancin will be calculated using cost of the drug, administration, and emergency department visit. Average cost per patient in the group treated with standard therapy will be calculated using cost per number of days they are hospitalized. The following data will be collected: patient age, gender, Body Mass Index (BMI), ABSSSI characteristics, antibiotics given, location in hospital for treatment, length of stay (LOS), reported adverse medication events, and treatment post-discharge. All data will be recorded without patient identifiers to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-222

Poster Title: Development, implementation, and evaluation of an oral glucose gel protocol within a mother baby nursery unit

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Purpose: Hypoglycemia is a common metabolic problem in neonates, with a normal transient decline in blood glucose concentration at birth. Currently neonates with hypoglycemia are often admitted to the neonatal intensive care unit (NICU) for intravenous (IV) dextrose. The goal of this study is to implement an oral glucose gel protocol within the mother baby nursery unit to decrease the number of neonates requiring transfer to the NICU for IV placement and IV dextrose infusion. Successful protocol implementation would enable the neonate to remain with the mother and reduce stress and infection risk by avoiding IV line placement.

Methods: This study will be submitted to the Institutional Review Board for approval. The study design is a retrospective quasi-experimental review of the implementation of an oral glucose gel protocol in a mother baby nursery unit. The eligible neonatal population will be greater than or equal to 35 weeks gestational age, less than 4 hours old, at either high risk for neonatal hypoglycemia (large for gestational age, intrauterine growth restriction, small for gestational age, maternal diabetes or less than 37 weeks gestational age, perinatal stress or Apgar score of less than or equal to 6 at 5 minutes of life) or symptomatic (apnea, decreased muscle tone, poor suck, temperature instability, jitters, pallor/diaphoresis), and have a blood glucose concentration of 25 – 45 mg/dL. A retrospective chart review of neonates admitted to the NICU for hypoglycemia for one year prior to implementation of the protocol will be conducted to determine how many neonates could have been trialed with the protocol, and possibly prevented admission to the NICU. Following protocol implementation, data will be recorded in a retrospective manner to audit protocol utilization and identify the number of NICU admissions for hypoglycemia. The primary outcome will be to determine if the oral glucose gel

protocol was successful by comparing the number of NICU admissions for hypoglycemia prior- and post- protocol implementation.

Results: N/A

Conclusion: N/A

Submission Category: Critical Care

Submission Type: Research-in-Progress

Session-Board Number: 12-223

Poster Title: Corticosteroids in acute respiratory distress syndrome: Patterns of utilization within the intensive care unit

Primary Author: Elizabeth Levins, Providence Health and Services at Providence Portland and Providence St. Vincent Medical Centers, OR; **Email:** elizabeth.levins@providence.org

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Purpose: Acute Respiratory Distress Syndrome (ARDS) is a pulmonary complication of critical illness. Its hallmark is the development of acute hypoxic respiratory failure with sudden onset of diffuse lung injury and the presence of bilateral pulmonary infiltrates. The literature regarding the use of corticosteroids in this disease are conflicting and no general consensus has been reached. The objective of this study is to evaluate the use of corticosteroids in the Intensive Care Unit (ICU) in relation to patient specific outcomes in order to guide future practice.

Methods: This study will be submitted to the Institutional Review Board for approval. A retrospective cohort study will be conducted at a 523 bed tertiary, teaching hospital. The electronic medical record system will be used to identify patients that were admitted to the Intensive Care Unit (ICU) and either presented with, or later diagnosed as having Acute Respiratory Distress Syndrome (ARDS). Patients will be evaluated based on prescriber preference to utilize corticosteroid therapy post diagnosis of ARDS. The following data will be collected: patient age, weight (actual and adjusted), past medical history, day of treatment initiation from diagnosis, medication used, dose and elected taper duration. Average daily ventilator settings will also be recorded to assess patient's response to the treatment modality prescribed as well as any adverse reactions incurred from steroid therapy. Additional interventions, such as neuromuscular blockers, inhaled nitrous oxide and extracorporal membrane oxygenation (ECMO) will be recorded if pursued. A composite outcome of mortality, length of stay (LOS) and days on ventilator after diagnosis will be used to assess patient outcomes in regards to recovery. All data will be stored on a secure server, accessible only by password and will be recorded without patient identifiers to maintain confidentiality.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-224

Poster Title: Concomitant use of vancomycin and piperacillin-tazobactam and the risk of acute kidney injury

Primary Author: Peter Hoang, Providence Health and Services at Providence Portland Medical Center, OR; **Email:** peter.hoang@providence.org

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Purpose: Emerging literature suggests that acute kidney injury (AKI) occurs more frequently in patients receiving combination therapy of vancomycin and piperacillin-tazobactam (PT), than patients treated with vancomycin alone. The primary objectives of this study are to determine the rate and describe the severity of AKI at a not-for-profit hospital with 483 licensed beds amongst patient who received concomitant vancomycin and PT for greater than 2 days. Secondary objectives include the identification of risk factors for AKI amongst the study cohort.

Methods: This will be a retrospective study utilizing data from the EPIC electronic medical records. All data will be de-identified and maintained confidentially. Patients will be included if they are 18 years of age or older and were co-administered vancomycin and PT for greater than or equal to 2 days with a baseline serum creatinine of less than or equal to 1.4 milligrams per deciliter (mg/dL) between 11/15/2015 and 7/14/2016. Included patients must have vancomycin and PT started within 24 hours of each other. In order to evaluate the rate and severity of AKI, we will use the risk, injury, failure, loss, and end-stage kidney disease (RIFLE) criteria. In order to examine risk factors for AKI, a case control study design will be used in which cases will be defined as patients with AKI and controls defined as patients without AKI. Variables to be collected include admission source, demographics, comorbidities, intensive care unit stay, relevant laboratory parameters, microbiology data, concomitant nephrotoxic agents, vancomycin loading dose, and the dose and duration of vancomycin and PT.

Results: N/A

Conclusion: N/A

Submission Category: Clinical Services Management

Submission Type: Research-in-Progress

Session-Board Number: 12-225

Poster Title: Development and implementation of a pharmacist lead glycemic control program on an inpatient post-surgical spine and orthopedic unit

Primary Author: Bonnie Jiron, Providence Medford Medical Center, OR; **Email:** bonnie.jiron@providence.org

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Herbey Lumbreras

Purpose: Hyperglycemia occurs in a significant percentage of hospitalized patients. Improved glycemic control leads to reductions in hospital complications, length of stay, and mortality. Despite the potential benefits of improved glycemic control patients admitted to hospitals may not receive optimal glucose management. Expanding the roles of nonphysician health professionals, such as pharmacists, will be central to the success of new healthcare delivery models in optimizing quality and providing timely evidence-based medicine. The aim of this study is to determine the impact pharmacists have on inpatient glycemic control when consulting on glucose management as part of an Inpatient Glycemic Team.

Methods: A six month, prospective pilot study is planned. The Inpatient Glycemic Team will be lead by pharmacists and diabetes educators, and include hospitalists, nurses and other practioners. Patients admitted to the spine and orthopedic recovery unit will be identified through an Epic report that will be manually generated by a pharmacist and dietician each morning. This report will include patients that have blood glucose readings greater than 180 milligram per deciliter or less than 70 milligram per deciliter. Pharmacists will request to consult on glucose management from the attending practitioner. Consult will involve pharmacists ensuring that patients are on correct order sets, dosing insulin if indicated, and monitoring laboratory parameters. Pharmacists and dieticians will generate a report within Epic to track those patients being consulted on and their glucose control. The Glycemic Team will provide in-service education to pharmacists, hospital medical staff, and nursing staff. Pharmacists will provide patient education in coordination with diabetic educators. Overall, blood glycemic management will be compared before and after implementation of the Glycemic Team intervention. Data will be analyzed to report the number of consults made by pharmacists,

compliance with glycemic order sets, the amount of time patients are euglycemic in order to identify any impact the establishment of an Inpatient Glycemic Team had on glycemic control. Investigational Review Board approval will be submitted for this study.

Results: n/a

Conclusion: n/a

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 12-226

Poster Title: Management of side effects of oral oncology therapies with side effect management kits provided by a specialty pharmacy

Primary Author: Joshua Loesche, Providence Milwaukie Hospital, OR; **Email:** joshua.loesche@providence.org

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Purpose: Side effects of oral oncology therapies can decrease patient quality of life and decreased adherence which can potentially lead to lack of efficacy and potentially require escalation in step-wise therapies. This in turn can lead to an increase of overall healthcare consumption. The objective of this study is to determine if the severity of side effects of oral oncology therapies can be mitigated with pharmacy-provided side effect management kits.

Methods: This study will be submitted to the Institutional Review Board for approval. The electronic medical record will identify patients currently receiving an oral oncology therapy with a side effect targeted for pharmacy management (constipation, stomatitis, dermatologic reactions). The patients will be supplied with pre-assembled kits by the pharmacy, and will be provided counseling for use of the kit to manage the most common side effects that may occur during therapy. Patients will receive routine follow up by the pharmacy. Information such as the number of times kit items were used, number of missed doses due to side effects, patient-reported adherence, and patient reported quality of life will be collected through in-person or telephone assessment. All data collected will be recorded without patient identifiers and will be maintained confidentially. Data collected from patients following the use of pharmacy-provided side effect management kits will be compared to data collected prior to the implementation of the kits.

Results: N/A

Conclusion: N/A

Submission Category: Emergency Medicine/ Emergency Department/ Emergency Preparedness

Submission Type: Research-in-Progress

Session-Board Number: 12-227

Poster Title: Development and implementation of a pharmacist driven antimicrobial urine culture follow up program at a rural community hospital

Primary Author: Amy Tzou, Providence Newberg Medical Center and Providence Milwaukie Hospital, OR; **Email:** amy.tzou@providence.org

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Carol Keller

Purpose: Pharmacists in the emergency department (ED) have been utilized to enhance the level of care in acute settings, particularly in antimicrobial stewardship efforts. Despite being one of the leading indications for ED antibiotic prescribing, urinary tract infections (UTI) are often discharged on empiric therapy. Urine cultures and sensitivities with subsequent patient follow-up are necessary to provide better targeted care, but place additional burden on ED providers. ED pharmacists can help facilitate and potentially shorten time sensitive urine culture review and patient follow up to provide appropriate antimicrobial therapy modification.

Methods: This study will be submitted to the Institutional Review Board for approval. A single-hospital retrospective review of electronic medical records will be used to identify ED patients for whom urine cultures were obtained and subsequently discharged on antibiotics. Patients under the age of 18 or hospitalized after ED presentation will be excluded. The following data will be collected: time to review culture (days); time to review sensitivities (days); negative/positive culture; source of culture; organism and count; antibiotics prescribed; whether empiric antibiotics were appropriate (according to sensitivities); time to patient contact. Pharmacist intervention will be implemented mid-study and will include urine culture follow-up and appropriate patient contact. Additional data regarding if physician consultation was required will be collected alongside post-intervention data.
Pre and post surveys for provider satisfaction will be provided to ED physicians to evaluate perceived availability and time commitment for urine culture review. Data analysis will evaluate median time to chart review; median time to patient contact if therapy modification warranted; percentage of appropriate empiric UTI antibiotic therapy; and potential cost-savings for the hospital system.

Results: N/A

Conclusion: N/A

Submission Category: Oncology

Submission Type: Research-in-Progress

Session-Board Number: 12-228

Poster Title: The role of antimicrobial prophylaxis in patients with head and neck cancer undergoing radiation and/or chemotherapy

Primary Author: Alina Jaeger, Providence Portland Medical Center, OR; **Email:** alina.jaeger@providence.org

Additional Author (s):
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Purpose: Patients undergoing chemoradiation for head and neck cancer often experience mucositis, which increases the risk for infection. The National Comprehensive Cancer Network does not currently have strong recommendations regarding the use of antimicrobial prophylaxis in patients with head and neck cancer. Since there are no guidelines, the use of antimicrobial prophylaxis is often provider dependent. The objective of this study is to determine the effect of prophylactic antimicrobials on the incidence of infection in patients undergoing radiation and/or chemotherapy for head and neck cancer in an outpatient setting.

Methods: This study will be submitted to the Institutional Review Board for approval. Patients who have received chemoradiation for head and neck cancer between July 2013 and July 2016 will be identified by the electronic medical record system. Individuals who are 18 years of age or older, diagnosed with head and neck cancer, undergoing radiation and/or chemotherapy, and seen for treatment in an outpatient oncology network will be included in the study. The exclusion criteria will include the occurrence of an infection that can be attributed to an extraneous cause unrelated to cancer or chemoradiation. Patients will be organized into two cohorts, those who received prophylactic antimicrobials, and those who did not. Demographic data includes patient age, sex, primary diagnosis/location of cancer, type of chemotherapy agent(s) used, and type of antimicrobial(s). Outcomes data includes early discontinuation of antimicrobials, occurrence of infection, hospital admission, length of hospitalization, and occurrence of mucositis. Recorded data will not include any patient identifiers and will be maintained confidentially. Chi-square tests will be used to assess nominal data, which includes the incidence of infection, hospitalization, occurrence of mucositis and discontinuation of

antimicrobials between cohorts. Student's t-test will be used to assess duration (days) of hospitalization.

Results: N/A

Conclusion: N/A

Submission Category: Infectious Diseases

Submission Type: Research-in-Progress

Session-Board Number: 12-229

Poster Title: Appropriateness of antimicrobial prescribing: antimicrobial stewardship across transitions of care

Primary Author: Justin Bachman, Providence Portland Medical Center, OR; **Email:** justin.bachman@providence.org

Additional Author (s):
Brent Footer

Purpose: Inappropriate antimicrobial prescribing has a significant impact on both individual and public health. This coupled with the emergence of increasing antimicrobial resistance has resulted in a recent focus on antimicrobial stewardship. Antimicrobial stewardship has traditionally focused on hospitalized patients while largely ignoring the fact that the majority of patients complete their antimicrobial course after discharge. A recent study found that 53% of analyzed patients discharged on antibiotics were prescribed an inappropriate antimicrobial regimen. The objective of this study is to evaluate current discharge oral antibiotic prescribing practices for appropriateness and identify common factors that may be leading to inappropriate prescribing.

Methods: This is a retrospective cohort study and will be submitted to the Institutional Review Board for approval. The electronic medical record system will be used to identify patients treated with antimicrobial agents discharged from the medicine units, who were subsequently prescribed oral antimicrobial agents at the time of discharge to finish the treatment course. Of patients identified the following data will be collected if available: patient age, gender, type of infection, inpatient antimicrobial agents, inpatient treatment duration, discharge antimicrobial agents, outpatient treatment duration, antimicrobials within the past 90 days, past medical history, inpatient unit, discharging physician, presence of an infectious disease physician consultation, serum creatinine, liver function tests, collected culture results including Gram stain, organism, and sensitivities. Provider documentation in the electronic medical record will be reviewed for reasoning of discharge antimicrobial selection. All data will be recorded without patient identifiers and maintained confidentially. Antimicrobial selection, dose, and duration will be compared to local and Infectious Diseases Society of America guidelines to

determine appropriateness. All deviations from recommended guidelines deemed inappropriate will be documented and categorized either as indication, dose, or duration.

Results: N/A

Conclusion: N/A

Submission Category: Practice Research/ Outcomes Research/ Pharmacoeconomics

Submission Type: Research-in-Progress

Session-Board Number: 12-230

Poster Title: Transitions of care: Evaluating pharmacy impact on high-risk patients

Primary Author: Catherine Behret, Providence Portland Medical Center, OR; **Email:** catherine.behret@providence.org

Additional Author (s):
Luetta Jones

Purpose: Maintaining and communicating accurate patient medication information is recognized as a National Patient Safety Goal by the Joint Commission that is pertinent to all healthcare settings. Accurate medication information is critically important in patients with an increased risk of readmission related to disease state or high-risk medications. The purpose of this project is to develop workflow to support targeted pharmacy involvement in transition of care for inpatients with heart failure or with newly initiated oral anticoagulants. Outcomes to be evaluated include 30-day readmissions and Hospital Consumer Assessment of Healthcare Providers and Systems (HCAHPS) scores.

Methods: The study design is a retrospective study of patients with heart failure or new start oral anticoagulants in two large tertiary hospitals. Patient identification will occur through the use of the medical record and a heart failure readmission risk complexity scoring tool. The electronic medical record will identify all inpatients receiving pharmacy documented transition of care services including collection of admission medication list, patient education and discharge medication list review. Readmission rates between patients who received transition of care pharmacy services will be compared to all patient readmissions. Patients excluded from readmission analysis include patients with planned readmissions, who leave against medical advice or expire, or who are discharged to another acute facility or hospice facility. Data collection will include patient age, gender, nursing unit, and discharge disposition. HCAHPS scores for medication and discharge communication scores will be obtained. Patient identifiers will not be retained. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Pediatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-231

Poster Title: Evaluation of once daily versus three times daily metronidazole for postoperative treatment of perforated appendicitis in pediatric patients

Primary Author: Henry Tran, Providence Portland Medical Center, OR; **Email:** henry.tran@providence.org

Additional Author (s):
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Purpose: Perforation of the appendix is an indication for multiple days of intravenous antibiotics postoperatively. Numerous treatment approaches have been shown to be effective in reducing the incidence of wound infection and intra-abdominal abscess formation. The objective of this study is to compare once daily metronidazole dosing to three times daily metronidazole.

Methods: This study will be submitted to the Institutional Review Board for approval. The study will be a retrospective chart review of pediatric patients who received either metronidazole once daily or three times daily between September 2014 through September 2016 after appendectomy surgery. Patients will be separated into two groups: those who received 30 milligrams per kilogram metronidazole once daily and those who received 30 milligrams per kilogram metronidazole divided three times daily. Both groups will also have received ceftriaxone 50 milligrams per kilogram. Patient's age, weight, sex, maximum temperature and white blood cell count prior to antibiotics are recorded through chart review. In addition, pre-operative antibiotics, operative technique and complications during operation will be recorded. The primary objectives of postoperative length of stay and number of patients who had abscess formation will be compared between the two groups. Secondary outcomes of total duration of intravenous antibiotics, total dose and cost of antibiotics, time to afebrile, time to oral intake and tolerability will also be investigated.

Results: N/A

Conclusion: N/A

Submission Category: Cardiology/ Anticoagulation

Submission Type: Research-in-Progress

Session-Board Number: 12-232

Poster Title: Evaluation of thromboembolic and major bleeding events in patients prescribed oral anticoagulants managed in an ambulatory care setting

Primary Author: Patricia Chaffey, Providence Portland Medical Center, OR; **Email:** patricia.chaffey@providence.org

Additional Author (s):
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Purpose: Current studies show that direct-acting oral anticoagulants (DOACs) are associated with fewer and less severe bleeding complications compared to warfarin. Optimal use of DOACs is complicated by the lack of assays to measure the magnitude of anticoagulation effects associated with their use. Furthermore, patient outcomes as a result of prescribing DOACs deviating from the approved labeled indication and dose is not fully characterized. The objective of this study is to determine if a pharmacist led anticoagulation clinic results in better patient outcomes in terms of reduced thromboembolic and major bleeding events in patients prescribed warfarin or DOACs.

Methods: This study will be submitted to the Institutional Review Board for approval. Electronic medical records will be utilized to identify patients prescribed oral anticoagulants presenting to the emergency department or admitted inpatient with a diagnosis of a thromboembolic or major bleeding event. The following data will be collected: patient age, gender, ethnicity, oral anticoagulant prescribed, indication for anticoagulation, dose of oral anticoagulant, anticoagulant start date, length of treatment, enrollment in an anticoagulation clinic, concurrent medications potentially increasing bleeding risk, history of bleeding, prior thromboembolic event, CHADS2 scores, CHA2DS2-VASc scores, HAS-BLED scores, serum creatinine, and creatinine clearance. Provider documentation will be reviewed to determine if there is a reason for patients prescribed a dose of an oral anticoagulant that deviates from the food and drug administration (FDA) approved labeled indication. All data will be collected and reported without the use of patient identifiers and will be maintained confidentially.

Percentage of major bleeding and thromboembolic events observed will be calculated. This data will be reviewed by a team of pharmacists to determine the incidence of thromboembolic and major bleeding events amongst patients on oral anticoagulants managed by an anticoagulation clinic or other clinician. The reviewers will rate each patient's oral anticoagulant indication and dose as appropriate per FDA labeled indication, inappropriate per FDA labeled indication but clinically appropriate, or inappropriate per FDA labeled indication and clinical status.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-233

Poster Title: Safe Opioid Prescribing for Emergency Department Discharge Patients

Primary Author: Randi Agata, Providence Portland Medical Center, OR; **Email:** randiagata@gmail.com

Additional Author (s):
Luetta Jones

Purpose: Approximately 47,000 drug overdose deaths occurred in 2014, with over half of these deaths involving an opioid (including prescription opioids and heroin). National research has found that 39 percent of all opioids prescribed, administered, or continued come from the emergency department (ED). The objective of this study is to evaluate discharge opioid prescribing in the Emergency Department and identify opportunities to decrease the quantity and potency of opioids prescribed.

Methods: The design is a retrospective study of opioid prescribing in the emergency departments of eight hospitals. Data from the electronic medical record will be used to identify patients 18 years of age and older, who have been discharged from the emergency department with an opioid prescription. Study exclusions are ED visits resulting in a hospital admission, ED patients that leave without being seen or formally discharged and ED transfers to another hospital. Data to be collected includes patient age, chief complaint upon presentation in the ED, name of the medication prescribed upon discharge including its strength (dose) and formulation, and quantity prescribed. Trends in ED discharge opioid prescribing will be compared across hospitals and interventions to improve safe prescribing practices identified and implemented. Patient identifiers will not be retained. This study will be submitted to the Institutional Review Board for approval.

Results: N/A

Conclusion: N/A

Submission Category: Geriatrics

Submission Type: Research-in-Progress

Session-Board Number: 12-234

Poster Title: Efficacy of dementia medications in controlling behavior symptoms and reducing use of psychotropic medications in ElderPlace patients

Primary Author: Monica Dougherty, Providence St. Vincent Medical Center, OR; **Email:** monica.dougherty@providence.org

Additional Author (s):
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Purpose: Adults with dementia experiencing behavioral and psychological symptoms of dementia (BPSD) can be distressing for patients and creates challenges for caregivers. Psychotropics are used off label to treat BPSD, though these medications have safety concerns, creating the need for safer and more effective therapies. Studies suggest acetylcholinesterase inhibitors (AChE-Is) and memantine may be beneficial to treat BPSD. The objective of this continuation study is to determine the effectiveness of these medications in treating BPSD, and analyze the use of psychotropics in patients started on dementia medications in dementia patients enrolled in a Program of All-Inclusive Care for the Elderly (PACE).

Methods: This study is an extension of previous work completed by a PGY-1 Pharmacy Resident, and will be submitted to the Institutional Review Board for approval. Inclusion criteria consists of patients with a dementia diagnosis initiated on an AChE-I and/or memantine. During this study period, the clinical pharmacist team will be alerted of new orders for dementia medications. The Pharmacy Resident or Clinical Pharmacist will conduct a Neuropsychiatric Index (NPI) with the patient's caregiver to assess severity of BPSD. In addition, use of psychotropic medications will be evaluated at baseline. A follow-up NPI and psychotropic medication use will be conducted at three months post-initiation to analyze change in BPSD. In patients that have already had an NPI conducted at three months in the original study portion, a follow-up NPI and psychotropic medication use will be conducted at six months or greater than six months post-initiation of dementia medications. Data will be collected via electronic medical record (EMR) review. The following data will be collected: dementia diagnosis type, SLUMS scores, NPI scores, dementia and psychotropic medications, date of initiation or

discontinuation and reasons for discontinuation of all medications. A subgroup analysis of the change in NPI, and change of psychotropic medications, will be completed in three patient groups: AChE-Is only, memantine only, and combination of both. All data will be recorded without patient identifiers and maintained confidentially.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-235

Poster Title: Appropriateness of proton pump inhibitor utilization in an integrated health-system

Primary Author: Benjamin Vermillion, Providence St. Vincent Medical Center, OR; **Email:** benjamin.vermillion@providence.org

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Purpose: The use of proton pump inhibitors (PPIs) has increased despite concerns for over prescribing, associated adverse events, and increased costs. The aim of this study is to assess appropriateness of PPI prescribing and identify opportunities to align practice with evidence-based guidelines.

Methods: This study will be submitted to the Institutional Review Board for approval. Electronic reporting systems will be used to identify PPI orders. Aggregate data will be analyzed to characterize our study population and to determine PPI utilization trends. Medical record review will be conducted on a subpopulation to further characterize PPI prescribing practices including compliance with evidence-based guidelines. The pre-determined indications include duodenal ulcer disease, erosive esophagitis, gastroesophageal reflux disease (GERD), Zollinger-Ellison syndrome, pathologic gastric hypersecretion, helicobacter pylori as part of triple therapy, acute and recurrent upper gastrointestinal bleeding, and stress ulcer prophylaxis. In addition, data will be assessed to identify predictors in PPI prescribing patterns, opportunities to improve prescribing practices, potential adverse events, and cost implications.

Results: N/A

Conclusion: N/A

Submission Category: Quality Assurance/ Medication Safety

Submission Type: Research-in-Progress

Session-Board Number: 12-236

Poster Title: Implementation of a total parenteral nutrition (TPN) pharmacy protocol and standardization of safety practices in accordance with the American Society of Parenteral and Enteral Nutrition

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Additional Author (s):
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Purpose: TPN is defined by the Institute for Safe Medication Practices (ISMP) as a high-alert medication, carrying a heightened risk to cause significant patient harm when used in error. Roughly only 58% of organizations have protocols in place to protect from medication errors associated with TPN. ASPEN currently makes recommendations within four areas: prescribing and communication of the physician order, order review and verification, compounding of TPN, and the administration of TPN. The purpose of this study is to evaluate current TPN workflow within a hospital system and identify necessary adjustments to ensure alignment with ASPEN safety recommendations.

Methods: IRB will be submitted for this study. Pharmacists will be given the opportunity to take a pre-survey assessing their current knowledge of both safety and clinical aspects of TPN. The survey will include questions on laboratory value monitoring, appropriate indications and contraindications for TPN, safety surround the TPN workflow, and their current personal comfort level with making electrolyte adjustments to TPN preparations. The data gathered from the survey will help to generate pharmacist education sessions in which appropriate clinical and safety applications of TPN will be presented. An assessment of TPN workflow at SCHS will be performed and compared to the 2014 safety recommendations from ASPEN. A TPN medication use evaluation will be performed using retrospective, de-identified chart data from 30 different patients within the past year. The information gathered will be used to promote the initiation of both a TPN per pharmacy protocol and the revamping of TPN workflow to include many new safety precautions that SCHS has not yet initiated.

Results: N/A

Conclusion: N/A

Submission Category: General Clinical Practice

Submission Type: Research-in-Progress

Session-Board Number: 12-237

Poster Title: Technician checking validation program (TCVP) at a central Oregon hospital

Primary Author: Alexander Miller, St. Charles Health-System, OR; **Email:** asmiller@stcharleshealthcare.org

Additional Author (s):
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Purpose: The technician checking validation program (TCVP) is a tool that permits hospital pharmacists to focus on clinical matters while a certified technician performs distributive tasks. The objective of this study is to evaluate the impact of the TCVP on workflow and to develop the processes used to implement a pilot program at St. Charles Medical Center (SCMC).

Methods: This study will be sent to the Institutional Review Board for approval. Baseline time spent by pharmacists checking automated dispensing cabinet medication refills will be collected over the course of a week with a timer. An anonymous survey, given to technicians and pharmacists, may be used to assess baseline attitudes toward roles in the inpatient pharmacy, as well estimate the possible personal impact of the TCVP at St. Charles. Policies and procedures will be developed and implemented per the requirements set by the Oregon Board of Pharmacy (OBOP) that meet all necessary criteria for the TCVP as laid out in Oregon law OAR 855-041-5100. A proposal will be developed and approval for the program will be obtained from the state board of pharmacy. Eligible staff will be identified and validated to participate in the program, and appropriate training will be completed with the intent of developing TCVP-certified technicians at SCMC. Quality assurance will be recorded in the form of documentation of medication checking errors discovered during the pilot program. Progress assessments will be conducted at designated intervals. The scope of practice of a validated checker will be described, such as types of included medications and a list of “high-risk” medications to be excluded. Finally, the overall impact of the TCVP on pharmacy workflow will be assessed by examining time spent on distributive or cognitive tasks.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-238

Poster Title: Evaluation of fluoroquinolone prescribing for acute sinusitis, acute bronchitis, and uncomplicated urinary tract infections at a Community Health Center

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Purpose: A recent FDA warning has advised restricting the use of fluoroquinolone antibiotics for the treatment of acute bronchitis, acute sinusitis, and uncomplicated urinary tract infections (UTI) when other treatment options are available. This restriction was issued due to an observed increase in the risk of side effects involving the nerves, joints, and tendons in patients receiving systemic fluoroquinolones. Since fluoroquinolones are not recommended as first-line agents in acute sinusitis, acute bronchitis, or uncomplicated urinary tract infections, the aim of this project is to evaluate the appropriateness of fluoroquinolone prescribing at Virginia Garcia Memorial Health Center.

Methods: This is a retrospective medication use evaluation of the fluoroquinolone drug class at Virginia Garcia Memorial Health Center. ICD-9 and ICD-10 codes will be used to identify patients with a diagnosis of acute sinusitis, acute bronchitis, or uncomplicated urinary tract infections who were also prescribed a fluoroquinolone from January 1, 2015 to December 31, 2015. A review of the electronic medical record will evaluate medication use history and clinical outcomes. Specific areas of review include allergies, microbiology results and history of antibiotic use or hospitalization in the past 3 months. Appropriateness of prescribing will be evaluated based on current (Infectious Diseases Society of America, American College of Physicians, and Centers for Disease Control and Prevention) treatment guidelines. Inappropriate prescribing is defined as the use of a fluoroquinolone for acute sinusitis, acute bronchitis, or uncomplicated urinary tract without contraindications to a recommended first-line agent.

Results: N/A

Conclusion: N/A

Submission Category: Drug-Use Evaluation/ Drug Information

Submission Type: Research-in-Progress

Session-Board Number: 12-239

Poster Title: Evaluation of the prescribing practices of tricyclic antidepressants in adults 65 years and older at a federally qualified health center

Primary Author: Hannah Noh, Virginia Garcia Memorial Health Center, OR; **Email:** hnoh@vgmhc.org

Additional Author (s):
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Purpose: The 2015 Beers Criteria identifies tricyclic antidepressants (TCAs) as potentially inappropriate medications (PIMs) in adults 65 years and older due to their ability to cause sedation and orthostatic hypotension. The general recommendation is to avoid the use of tricyclic antidepressants in this population unless no safer alternatives are available. The objective of this medication use evaluation is to describe the rate of TCA prescribing and indications for use in older adults at Virginia Garcia Memorial Health Center (VGMHC). VGHMC is a federally qualified health center which provides care to patients through a patient centered medical home model.

Methods: This study will be submitted to the Institutional Review Board at Pacific University for approval. An existing internal report that includes data pulled from the electronic medical record consists of patients 65 years of age or older who are currently on a tricyclic antidepressant between May 1, 2014 and April 30, 2016 will be utilized. The following is also included in the data report: patient age, name and dose of the prescribed tricyclic antidepressants, and associated diagnosis for which the tricyclic antidepressant was prescribed. All data for evaluation will be recorded without patient identifiers and stored securely and confidentially. Chart review will be completed to fill in missing indications. The rate of tricyclic antidepressant prescribing and indications for use will help determine focus areas for provider education to improve the safety of tricyclic antidepressant prescribing practices at VGMHC in the future.

Results: N/A

Conclusion: N/A